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THE IMPORTANCE OF THE STREPTOCOCCUS IN GENITO-URINARY DISEASES

CHAIRMAN'S ADDRESS

HARRY CULVER, M.D.

CHICAGO

A casual understanding of the rôle of the streptococcus in genito-urinary diseases among any group interested in the clinical aspects will place its importance in widely varying spheres. Wrong conclusions, in this connection, can easily be made from one's own clinical experience. Without a careful search of the available sources of information and study of both the clinical and the experimental aspects of the subject, no measure of the rôle of the streptococcus in urology can be made.

With no thought of adding anything new to the subject, but for the purpose of directing attention briefly to the most important pertinent facts and probabilities, I open this subject of nonspecific infections of the urogenital tract.

Parks [1] says, "The group of bacteria known as streptococci is one of the most, if not the most important of the bacterial groups known to have a great influence upon man's welfare. Frequently there is not the sharp limitation of a streptococcus to a clinical disease as is the case with most other forms of bacteria. . . . It seems as if the temporary adaptation of the organism to growth in a special tissue or tissues frequently determines its virulence and the localization of its growth."

In general, streptococci are found wherever man has been found and are essentially parasitic on an animal host. In a normal healthy man the surface of the mucous membranes of the nasopharynx, the crypts of tonsils, the intestine and the skin are normal habitats of various types of streptococci, each tissue harboring a preponderance of a certain type. Although the mucous membranes of the nasopharynx commonly contain green-producing streptococci, broadly speaking this variety is essentially intestinal, while the hemolytic type is confined to the upper respiratory tract, especially the tonsillar crypts. These potentially virulent organisms living a saprophytic existence have no influence on the welfare of the host until local or general tissue defense decreases; they may then invade the tissues of the host and produce the pathologic changes which their nature and the various tissue susceptibilities permit.

The genito-urinary tract, excepting the anterior urethra, is normally sterile. While the anterior urethra harbors as saprophytes some thirty odd species of bacteria,[2] including several varieties of streptococci, this structure probably plays a minor rôle in the production of streptococcic infections of other urogenital organs.

The fact that streptococci are found on and in the healthy human body is not necessarily important if the normal defense mechanism remains intact, but, as Williams [3] states, if the local susceptibility is slightly greater or the coccus a little more poisonous there may be a slow growth of the cocci in the tissues with a slow cellular response resulting in a subacute or chronic infective focus or a focal infection. By some it is contended that a more or less continuous absorption of bacteria or their products from such a focus into the blood or lymph streams may result in subacute or chronic disease conditions in distant organs.

During acute local infections and, as some contend, also during subacute and chronic focal infections, some bacteria pass into the general circulation. Usually these invaders are rapidly removed from the circulation by the body cells, but repeated bacteremias, regardless of the number of available bacteria, in susceptible individuals may react eventually on special tissues.

An observation pertinent to the practice of urology was made by Hopkins and Parker,[4] who injected intravenously slightly virulent hemolytic streptococci into insusceptible animals (cats). They found that the bacteria quickly disappear from the blood stream and are found most numerously in the lungs, less in the liver and spleen, and still less in the bone marrow, lymph nodes, muscle and kidney. While not conclusive, it is at least suggestive that the kidney is a factor in removing virulent organisms from the circulation during transient bacteremias, making it a recipient of repeated attacks under the circumstances previously mentioned. Going further in clinical application, one finds that such attacks on kidney tissue previously abnormally susceptible, owing to malformation, malposition or disease, or, as held by some, to the presence of circulating streptococci with a special affinity for this tissue, furnish local conditions that may result in inflammatory processes of varying degrees.

Commonly, clinical bacteriologic studies of various urogenital infections place the streptococcus as a minor offender. There is very little doubt that it plays a much greater rôle when one considers the necessity for special cultural mediums, the inability to obtain cultures of some organisms under any circumstances, the overgrowth of more readily cultivable secondary organisms

Read before the Section on Urology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Parks, W. H.: Introduction to Williams.[3]

2. Jungano, Michele: La flore de l'appareil urinaire normal et pathologique, Paris, G. Jacques, 1908.

3. Williams, Anna W.: Streptococci in Relation to Man in Health and Disease, Baltimore, Williams & Wilkins Company, 1932.

4. Hopkins, J. G., and Parker, J. T.: Effect of Injections of Hemolytic Streptococci on Susceptible and Insusceptible Animals, J. Exper. Med. **27**: 1 (Jan.) 1918.

and the technical experience necessary to cope with this problem.

The studies of Young, Colston and Hill [5] are representative clinical observations. These workers recovered streptococci in 11 per cent of 600 cases of bladder infections. In slightly less than half of the cases the streptococci were in pure culture. The same relative proportion of streptococcic infections was found in the kidney specimens studied.

That the kidney has a special susceptibility for certain streptococci or their toxins, or both, has been recognized clinically as exemplified by the kidney complications of scarlet fever. It remained for Duval and Hibbard [6] to reproduce experimentally in rabbits, by the injection of a preparation of Streptococcus scarlatinae, a kidney lesion similar in many respects to that of acute scarlatinal nephritis in man. This observation constitutes evidence of a possible specific relationship of the streptococcus.

Bumpus and Meisser [7] did outstanding work, both clinical and experimental, in emphasizing the importance of streptococcus-harboring foci of infection and their relationship to certain instances of pyelonephritis. They point out that oral focal sepsis is a common associated lesion in patients with pyelonephritis and demonstrate the frequent selective action on the kidneys of streptococci removed from these foci. The common bacillary infections of the kidneys are presumed to be caused in most instances by secondary invaders. Rational treatment should be directed toward the primary cause as well as toward the secondary local infection. This presumption has been strengthened by the clinical observations of Cabot and Nesbit,[8] who found that early pure coccic infections of the kidneys were sometimes succeeded by a mixed infection with colon bacilli. Bumpus and Meisser observed that following the removal of a suspected focus there frequently would occur an exacerbation of the urinary symptoms accompanied by chills and a rapid rise in temperature. They considered this a favorable sign indicating that the causative focus had been removed. Following such reactions streptococci would appear, for a time, in the urine, which previously had apparently contained only colon bacilli.

Rosenow and Meisser [9] similarly demonstrated a relationship between experimentally infected devitalized teeth in dogs and various forms of nephritis, using streptococci having an elective affinity for kidney tissue. In similar experiments, infecting devitalized teeth of dogs with streptococci isolated from urine of patients with urinary stone, they found urinary stones in the dogs in the majority of cases. The streptococci were isolated from the kidneys, from some of the stones and from the teeth of the dogs. By a carefully controlled technic Eisenstaedt [10] found streptococci in the substance of kidney stones in 16 per cent of the stones studied.

Grulee and Gaarde [11] observed clinical instances of acute hemorrhagic nephritis in children from acute infections of the tonsils and nasopharynx. Hemolytic streptococci showing a great similarity to the organisms found in the throat were found in the urine in some instances.

The infrequently mentioned and less frequently diagnosed entity of renal infarction commonly, but not necessarily, secondary to endocarditis, is in a great majority of the properly studied instances, of streptococcic origin. Barney and Mintz,[12] in analyzing 143 such lesions, found the streptococcus in 72.7 per cent of the positive cases. Huggins [13] reports an instance of bilateral streptococcic renal infarction clinically cured by nephrectomy and subsequent drainage of the remaining kidney. There was no finding of endocarditis.

Falls [14] and his co-workers have found by tissue culture from the depths of the uterine cervical glands that the green-producing streptococcus was the predominating organism in most of the cases of endocervicitis studied. This is an important observation when considered in conjunction with the conclusion of Winsbury-White [15] that cystitis is a common companion of cervicitis; the bladder infection, localized at first to the region of the trigon, at least suggests a lymphatic connection between the cervix and the trigon. Certainly this combination of lesions is a common observation.

Submucous cystitis probably represents the lone streptococcic infection of the urogenital tract with more than presumptive evidence of specificity, with the possible exception of the orchitis of mumps. When not associated with ordinary cystitis, pure cultures of green-producing streptococci have been repeatedly recovered from the urine and from resected tissues. There can be little doubt from a clinical point of view that these lesions are metastatic and the well known experimental results of Bumpus and Meisser [16] add strength to this assumption. They injected nineteen animals with primary cultures from the teeth and tonsils of patients having submucous cystitis; sixteen of these animals developed lesions of the urinary tract, and in thirteen the lesions were in the urinary bladder. Only ten of 239 animals injected with streptococci from the teeth and tonsils of patients having diseases other than urinary infections developed lesions of the urinary tract.

Without bacteriologic facts to substantiate it but with pathologic observations to suggest it, Hunner [17] has indicated that streptococci from similar foci may produce ureteral lesions resulting in stricture. Probably the primary ureteral lesion is much more common than the resulting stenosis.

The anatomic situation of the prostate and seminal vesicles, together with their construction, make them especially susceptible to all types of infection. Herrold,[18] using special cultural methods, isolated streptococci in

5. Young, H. H.; Colston, J. A., and Hill, Justina H.: Infections in the Genito-Urinary Tract and Complications, J. A. M. A. **98**: 715 (Feb. 27) 1932.

6. Duval, C. W., and Hibbard, R. J.: Experimental Glomerulonephritis Induced in Rabbits with the Endotoxic Principle of Streptococcus Scarlatinae, J. Exper. Med. **44**: 567 (Oct.) 1926.

7. Bumpus, H. C., and Meisser, J. G.: Focal Infection and Selective Localization of Streptococci in Pyelonephritis, Arch. Int. Med. **27**: 326 (March) 1921.

8. Cabot, Hugh, and Nesbit, R. M.: Coccus Infections of the Kidney, Ann. Surg. **92**: 766 (Oct.) 1930.

9. Rosenow, E. C., and Meisser, J. G.: Elective Localization of Bacteria following Various Methods of Inoculation, and the Production of Nephritis by Devitilization and Infection of Teeth in Dogs, J. Lab. & Clin. Med. **7**: 702 (Sept.) 1922; Nephritis and Urinary Calculi After Production of Chronic Foci of Infection, J. A. M. A. **78**: 266 (Jan. 18) 1922.

10. Eisenstaedt, J. S.: Certain Tangible Factors in Etiology of Urinary Calculus, Tr. Chicago Urol. Soc. **1**: 65, 1931.

11. Grulee, C. G., and Gaarde, F. W.: Involvement of the Urinary Tract as a Result of Focal Infections in Children, J. A. M. A. **65**: 312 (July 24) 1915.

12. Barney, J. D., and Mintz, E. R.: Infarcts of the Kidney, J. A. M. A. **100**: 1 (Jan. 7) 1933.

13. Huggins, C. B.: Surgical Management of Bilateral Septic Infarction of the Kidneys, S. Clin. North America **13**: 1257 (Oct.) 1933.

14. Falls, F. H.: Personal communication to the author.

15. Winsbury-White, H. P.: The Spread of Infection from the Uterine Cervix to the Urinary Tract and the Ascent of the Infection from the Lower Urinary Tract to the Kidneys, Brit. J. Urol. **5**: 249 (Sept.) 1933.

16. Bumpus, H. C., and Meisser, G. D.: Focal Infections in Relation to Submucous Ulcer of the Bladder and to Cystitis, J. Urol. **6**: 285 (Oct.) 1921.

17. Hunner, G. L.: Ureteral Stricture, Excluding Cases Due to Tuberculosis and Cases Immediately Associated with Stone, Tr. Am. Urol. A. **10**: 87, 1916.

18. Herrold, R. D.: The Interpretation of Chronic Infections of the Prostate and Seminal Vesicles, J. A. M. A. **91**: 557 (Aug. 25) 1928.

34 per cent of 109 cases of chronic prostatitis and seminal vesiculitis, the types being equally divided between the hemolytic and green-producing organisms. He observed also a more pronounced and persistent lesion, as determined by palpation, than in the non-streptococcic lesions. All are familiar with the clinical frequency with which these structures become infected by metastases from distant foci, and more and more importance is being attached to these infections as a focus for further dissemination. Pelouze [19] states that so much attention is placed on certain primary areas of focal infection that other foci, though commonly secondary to them, and at times having a place of equal importance have been obscured. This is especially true of the prostate gland, which he believes is rarely a primary focus and that it cannot be cleared up as long as the primary focus remains. It is a common occurrence in large urologic wards to observe quite typical gonococcic infections of joints gradually assume the characteristics of streptococcic lesion and recovery cannot be expected until the various primary foci of infection, both streptococcic and gonococcic, have been eradicated.

Nickel [20] injected rabbits with green-producing streptococci isolated from infected prostates and seminal vesicles and found a marked tendency for them to localize in the tissues of the rabbits corresponding to the diseased tissue of the patients. Frequently the strains injected could be recovered from the experimental lesions in pure culture when often all other tissue cultures remained sterile. Obviously this important experimental result clearly points out the prostate and seminal vesicles as foci from which more generalized disease may originate.

In passing I shall only call attention to the specific streptococcic orchitis of mumps and postoperative erysipeloid infections.

Nonspecific infections of the urethra deserve more than passing attention at this time, owing to the vast number of intra-urethral manipulations being done. While streptococci are occasionally the predominating organisms in locally unprovoked nonspecific urethral infections, it is much more frequently the case following urethral trauma. This is especially so in long-continued trauma such as is obtained in indwelling urethral catheters. Nonspecific urethritis is the usual accompaniment of indwelling catheters. Cultural study of these infections shows an abnormally high incidence of streptococci as the predominating organism. The potential danger of this condition is obvious when followed by procedures such as transurethral vesical neck resections. Early in this work of resection I observed the most marked postoperative reactions following such local conditions. To obviate this danger I no longer prepare a patient for resection with an indwelling catheter for any extended period. In cases in which preparation is indicated, intermittent catheterization is done. If a considerable time for such preparation seems indicated, a suprapubic cystostomy is much preferred; as a result of this practice I am now doing 20 per cent of all resections following cystostomy. Following the same line of thought the postoperative indwelling catheter carries a like danger and should be removed as soon as is consistent with local conditions.

19. Pelouze, P. S.: Medical Importance of Focal Infective Prostatitis, Am. J. M. Sc. **184:** 254 (Aug.) 1932.
20. Nickel, A. C.: The Bacteriology of Chronic Prostatitis and Seminal Vesiculitis, J. Urol. **24:** 343 (Oct.) 1930.

It is logical to state that the streptococcus group of bacteria plays a really important rôle in the various phases of genito-urinary diseases. The presence of the organism is often not detected even in instances in which this is readily possible, and too frequently the significance is not properly interpreted. Although much effort has been expended in attempts to devise a specific chemical or biologic substance to attack these infections, nothing conclusive has resulted.

Much advance has been made in topical applications to local streptococcic infections, but this rarely has practical application in the practice of urology. The many researches in intravenous chemotherapy have emphasized the fact that it involves not only the direct effect on both parasite and host tissues but a number of indirect effects which may influence one way or another the curative results.[21] Most observers agree that with the exception of such diseases as syphilis there has been no evidence of satisfactory response to intravenous chemotherapy. The mechanism of immunity in these streptococcic endotoxic infections, as demonstrated by Gay,[22] depends chiefly on the large phagocytes of the reticulo-endothelial system. The opsonins in antiserums aid some, but the large phagocytes must be present in sufficient numbers to complete a cure. The part that these large phagocytes play in local or tissue infections has received much attention from Besredka [23] and others and perhaps eventually something definite will result from the use of streptococcus antivirus and endotoxic vaccine, clinical investigation of which is now being carried out in various places. It is maintained by some, however, that such immunity is strictly local, at the site of the injection. Gay indicates that Besredka's results may be explained by the stimulating effect of certain nonspecific and even nonantigenic substances, such as plain broth, which, as he has shown, stimulate and collect the tissue macrophages in their vicinity. Regardless of this contention, there is very definite clinical evidence of a value, striking in some instances, of the intracutaneous injection of antivirus in other infections, notably gonococcic. This method should not be eliminated on experimental data only and should be discarded in the treatment of the streptococcic infections only when found wanting after adequate clinical application.

When one appreciates that practically all of the streptococcic urogenital infections are secondary to some distant focus, usually in the head or the intestine, the first thought should be to eradicate the source of the infection before any hope of cure can be anticipated. Even though streptococci are not isolated from the urogenital lesion in certain persistent and recurrent urogenital infections, their presence as a primary and intermittent invader of these structures should be assumed and the patient should be treated accordingly.

7 West Madison Street.

21. Kolmer, J. A.: Chemotherapy of Bacterial Diseases: The Newer Knowledge of Bacteriology and Immunology, Philadelphia, W. B. Saunders Company, 1926, p. 1101.
22. Gay, F. P.: Fundamental Factors of Immunity, Medicine **8:** 211 (May) 1929.
23. Besredka, Alexandre: Local Immunization; Specific Dressings, edited and translated by Harry Plotz, Baltimore, Williams & Wilkins Company, 1927.

Eggs and Milk.—Man is the only animal that ingests eggs and milk throughout its lifetime. Man is also the only animal, as far as is known, which dies in early life from coronary sclerosis, and which acquires atherosclerosis almost universally in advanced life.—Leary, Timothy: Experimental Atherosclerosis in the Rabbit Compared with Human (Coronary) Atherosclerosis, *Arch. Path.* **17:**453 (April) 1934.

THE PROBLEM OF ACCIDENTAL POISONING IN CHILDHOOD

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Toxicology as it has been taught in medical schools has chiefly considered poisons in relation to homicide and suicide and as poisoning occurs in industrial medicine. Less attention is given to accidental poisonings. Textbooks on pediatrics have but little to say regarding accidental poisonings as a problem in diagnosis and treatment in children. Yet poisons are a real menace to the children of this country, as can be shown by hospital records and mortality statistics. These figures do not show nonfatal cases, those cases never seen by physicians, and those in which treatment was given but not placed on record. The experience of every pediatrician proves that poisonings are not infrequent in children. It is also obvious that such cases may not be recognized. Individual physicians see but few cases of any one poisoning, such as strychnine, but in the aggregate the cases amount to a total that goes far beyond that of diseases to which much more attention is given. The duration of symptoms in most cases is very brief, and records of the case are only those of the ambulance and coroner's office.

When the ever increasing number of poisons about the home and farm is considered it is not surprising that these tragedies occur, and it is evident that the problem will increase unless the attention of the profession and the public is directed along this line.

Accidental poisoning should be especially interesting to pediatricians because so many of these accidents occur in small children and because of the frequent difficulties in diagnosis, the high mortality from certain poisons, and the fact that children have a special susceptibility to certain poisons, such as opium and aniline.

Naturally, suicides are rare in childhood. Mortality statistics from the Bureau of Census for 1929 show but one suicide by poisoning (gas) under 10 years of age. Between 10 and 14 years of age this increases to thirty suicides.

A study of hospital records shows that poisoning due to drugs and poisons may be divided into two groups, those due to therapeutic accidents and those due to accidental ingestion of poisons. Out of 5,059 children admitted to the Strong Memorial Hospital in Rochester, forty-seven instances of poisoning were recorded. Of these, twelve were due to accidental poisoning by drugs, eight from food poisoning, and six from mushroom poisoning, and twenty-one were classified as therapeutic accidents. The latter were chiefly dermatitis medicamentosa due to phenobarbital, bromides and the like.

The accidents that occur in the treatment of disease are largely due to an idiosyncrasy or sensitivity that patients have to certain drugs. But other more serious accidents may occur, such as the administration of boric acid solution in place of saline solution by mouth or subcutaneously; also the administration of adult sized preoperative hypodermic injections to children.

Mortality statistics for 1929 show that 530 deaths from acute poisonings (gas excepted) occurred in the United States in children under 5 years of age, while only forty-seven instances were reported in children aged from 5 to 9 years. During the second year of life 260 deaths occurred, and during the third year 118. As might be expected, the small child just able to walk and get into things is the most frequent innocent victim, usually of some one's carelessness. When uncertainty exists as to diagnosis in children attacked with profound illness, the question of accidental poisoning must always be seriously considered. This is especially true if several members of the family have the same symptoms.

Poisonings have been confused with perforation or rupture of an abdominal viscus, general convulsions of gastro-intestinal or other origin, diabetes, nephritis, severe gastro-enteritis and the like.

TABLE 1.—*Fatal Poisonings of Children Five Years of Age and Under in New York State (Exclusive of New York City) from 1926 to 1932*

Kind of Poison	1926	1927	1928	1929	1930	1931	1932
Acetanilid	..	..	..	..	..	1	..
Arsenic	1	4	2	1	1	..	1
Atropine	1	..	..	..	..	..	..
Barbital	..	..	..	..	..	..	1
Belladonna	1	..	..	..	..	..	..
Bichloride of mercury	..	..	..	..	1	..	..
Boric acid	..	1	..	..	..	..	..
Camphorated oil	1	..	..	..	..	1	..
Carbon disulphide	..	..	..	..	1	..	..
Caustic potash	1	..	..	..	..	..	..
Compound cathartic	..	..	..	1	..	..	..
Creosote	..	..	..	..	..	1	1
Cresoline	..	..	..	..	1	..	..
Compound solution of cresol	..	2	1	..	..	..	..
Cyanide	..	..	..	..	1	..	..
Fireworks	..	..	..	..	..	..	1
Gasoline	..	..	1	1	..	2	..
Grip tablets	..	1	..	1	..	..	..
Hellebore	..	..	..	..	1	..	..
Horse chestnuts	..	1	..	..	..	..	..
Kerosene	..	1	1	2	1	1	1
Leaves of hedge	..	..	..	..	..	1	..
Lye	2	..	1	..	..	..	..
Medicine	..	..	..	..	..	1	1
Mercury (fireworks)	..	1	1	..	..	..	..
Methyl salicylate	..	1	2	..	..	..	..
Morphine sulphate	..	..	1	..	..	..	..
Muriatic acid	..	..	1	1	1	..	..
Nickel polish	..	..	..	..	..	1	..
Nightshade berries	..	..	..	1	..	..	..
Nitroglycerin	..	..	..	..	1	1	..
Phosphorus (fireworks)	3	..	..	..	1	..	..
Phosphorus (rat poison)	..	2	1	..	..	..	..
Pitch	1	..	..	..	..	..	..
Salicylate	..	..	..	..	1	..	..
Sodium nitrate	..	..	..	..	1	..	..
Soldering fluid	1	..	..	..	..	..	..
Seed of jimson weed	..	..	1	..	..	..	..
Spraying solution (grapes)	..	..	..	..	1	..	..
Strychnine	14	13	12	12	9	13	2
Turpentine	..	..	..	1	..	..	..
Unknown poisons	..	..	2	..	..	..	..
Whisky	..	..	..	..	..	1	..
Wood alcohol	..	..	..	..	1	..	..
Zinc stearate	..	..	..	2	..	..	..
Total	26	27	27	23	23	24	8

The symptoms produced by certain drugs also cause problems in diagnosis and treatment. The disturbances in body temperature, flushing of the skin and increased respiratory or pulse rates produced by atropine have caused confusion. The extreme cyanosis seen in shoe dye poisoning from nitrobenzene or in aniline poisoning occurring from ink used in marking diapers may be puzzling. The serious symptoms that may be produced in small infants by the use of mentholated nose drops and also the serious consequences following the inhalation of zinc stearate powder are both pediatric problems. The fact that bismuth subnitrate can produce nitrite poisoning must be kept in mind when a bismuth compound is prescribed for children.

Table 1 shows the deaths from accidental poisonings of children 5 years of age and under in New York State (exclusive of greater New York) classified under the international list number 177. These figures were

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

furnished by the New York State Department of Health. The poisons are recorded as they appeared on the death certificates and are not always clear and convincing. The table shows the wide range of poisons taken and also that certain poisons claim victims each year; poisoning due to arsenic from rat pastes, phosphorus or mercury poisoning from fireworks, lye, kerosene, cresol poisoning and lastly that ever present group due to strychnine. Strychnine poisoning [1] is chiefly due to brightly colored sugar-coated cathartic and tonic pills, such as A. B. & S., A. B. S. & C. and Hinckle's Cascara. These tablets sold over the drug counters without warning as to their danger cause more deaths than any other poison.

The one favorable showing in table 1 is for strychnine poisoning, which shows a considerable reduction. This must be due to improved treatment, although I would like to think that increased knowledge regarding this hazard has reduced the actual number of these accidents. One also wonders whether persons with chronic constipation have been influenced by high pressure radio and newspaper advertisements of saline and phenolphthalein cathartics to change from the older

TABLE 2.—*Poisons Found in Insecticides, Rodenticides and Fireworks*

Roaches, Ants, Fleas and Crickets	
Pyrethrum	Paris green (aceto-arsenite of copper)
Sodium fluoride	Thallium
Bedbug, Fly and Mosquito	
Cresol	Naphthalene
Phenol	Nicotine
Pyrethrum	
Rodents: Rats, Mice, Moles, Gophers, Wood Chucks	
Cyanide	Sulphur
Arsenic	Yellow phosphorus
Phosphorus	Formaldehyde
Thallium sulphate	Hydrocyanic acid
Red squill	Chloropicrin
Fireworks	
Mercuric sulphocyanide	Phosphorus ("spit devil" or "son of a gun")
Arsenic	Mercury in victory snakes

household remedies such as Hinckle's Cascara and A. B. & S. pills.

Table 2 lists some of the poisons to be found in insecticides, rodenticides and fireworks. Many instances are found in which whole families have been poisoned by mistaking an insect powder for a food ingredient or in which children have eaten preparations put out for rats.

Arsenic, sodium fluoride, nicotine, thallium and hydrocyanic acid, mercury and phosphorus are dangerous poisons and have all caused deaths of children.

The materials used in the painting trade contain many dangerous poisons. The widespread use of paints in the home results in many cases of poisoning. The habit of eating paint from cribs and toys has also caused much poisoning. Table 3 shows some of the poisons found in this group.

Many cosmetic preparations contain poisons and, as they do not come under the pure food laws, may have no warning on the label. The ingredients of these preparations are discussed in "Cosmetics and Allied Preparations," issued by the American Medical Association. There have been few deaths reported from cosmetics except in Japan, where many fatalities have occurred from lead in face powders.

Table 5 lists commonly used preparations containing poison substances which may be found about the home. The acids and alkalis contained in these articles come under the federal Caustic Poison Act, which requires, if the poison is used in or over a specified percentage,

TABLE 3.—*Poisons in Paints*

Lead	
White lead	
Chrome yellow, chrome orange and chrome green	
Glazes, enamels, putty	
Spray paints, lacquers and enamels	
Arsenic	
Sheels green	
Emerald green	
Benzene (C_6H_6)	
Quick drying paints	
Spray paints, lacquers, varnish	
Paint removers, shellac, stains	
Covering for automobile tops	
Bronzing and gilding fluids	
Methyl Alcohol and Denatured Alcohol	
Varnish and shellac	
Varnish and paint removers	
Solvents for gums, dyes, resins	
Coatings containing cellulose nitrate	
Naphtha	Turpentine
Benzine	Aniline

that poison labels and directions for treatment be placed on containers. Similar legislation should cover more of the poison articles about the home.

The public must first be informed that the articles contain poisons and then that unused medicines and poisons should either be destroyed or be kept away from children. Both the public and the profession must consider poison cases more seriously.

Treatment, especially stomach washing, should be instituted whenever suspicion of poisoning exists. Patients have died while speculation was going on as to diagnosis and treatment. More attention should be given to this subject in medical schools and hospitals and especially in the children's departments.

Emergency departments should be equipped for adequate treatment. An easily accessible outline of accepted methods of treatment should be available.

TABLE 4.—*Cosmetic Preparations*

Freckle Removers
Corrosive mercuric chloride
Ammoniated mercury
Bismuth
Mole and Wart Removers
Acids or caustics
Skin Foods and Creams
Mercury
Salicylic acid
Lead
Hair Tonics and Dyes
Lead
Sulphur
Silver salts
Pyrogallol
Bismuth
Arsenic
Salicylates
Aniline derivatives
Deodorants
Solution of an aluminum salt (practically harmless)
Depilatories
Barium or sodium sulphide
Thallium acetate

The mimeographed outline prepared by Hanzlik [2] for the San Francisco Department of Health gives such instruction. Such an outline can be easily replaced or changed when necessary.

1. Aikman, John: Strychnine Poisoning in Children, J. A. M. A. **95**: 1661 (Nov. 29) 1930.

2. Geiger, J. C.: Cyanide Poisoning in San Francisco, J. A. M. A. **99**: 1944 (Dec. 3) 1932.

Therapeutic accidents can be prevented by better written instructions and by more careful supervision of inexperienced interns and nurses. Parents must be warned when dangerous drugs are prescribed. Special safeguards must be thrown about all hypodermic subcutaneous and intravenous medications.

Medical science, having already reduced to a large degree the mortality rates in many childhood diseases, is looking for new fields in which advance can still be made. It seems to me that the profession and especially this section will find the problem here presented as worthy of its attention.

TABLE 5.—*Caustic Poisons*

Hydrochloric Acid
Tinners' acid (for mixing soldering fluid)
Hand and toilet bowl cleaners
Sink cleaners
Weed killers
Sulphuric Acid
Acid for refilling fire extinguishers
Electrolyte for lead storage batteries
Metal cleaners
Toilet bowl cleaners (acid sodium sulphate)
Nitric Acid
Metal cleaners
For wart removal
Phenol (Carbolic Acid)
Carbolic disinfectant soaps
Coal tar disinfectants and dips
Carbolated petrolatum and oils
Toothache remedies and other dental preparations
Oxalic Acid and Its Salts
Metal and wood polishes
Straw hat cleaners
Photographic materials (blue print and platinotype processes)
Ink removers
Rust removers
Bleaching preparations
Soluble laundry blue
Acetic Acid
Ink eradicators
Photographic hardeners
Shoe polishes
Metal polishes
Wart removers
Potassium and Sodium Hydroxide
Potash or lye
Paint and varnish remover
Washing and cleaning preparations
Dehorning preparations
Sink and drainpipe cleaners
Electrolyte for Edison storage batteries
Manicuring preparations
Silver Nitrate (Lunar Caustic)
Wart removers
Hair dyes
Silver polishing and plating compounds
Intensifiers for photographic work
Indelible marking inks
Ammonia
Ammonia water
Household ammonia
Cleaning compounds
Hartshorn liniments
Hair waving solutions

SUMMARY

1. Too little attention is given to accidental poisoning as it occurs in children.

2. More than 500 deaths from acute poisonings (gas excepted) occur yearly in the United States in children under 5 years of age. Practically one half of these occur during the second year of life and one fifth during the third year.

3. Poisoning presents special problems as to diagnosis and may be overlooked.

4. Strychnine poisoning due to brightly colored sugar-coated cathartic and tonic tablets causes more deaths in children than any other poison.

5. In order to reduce these accidents the public must be informed of the dangers of poisons kept within reach of children.

6. The contents of articles containing poisons should be placed on packages and poison labels required by law.

7. Better instructions regarding accidental poisoning should be given in medical schools and hospitals.

184 Alexander Street.

ABSTRACT OF DISCUSSION

DR. S. W. CLAUSEN, Rochester, N. Y.: Dr. Aikman's contribution demonstrates that physicians have much to do in preventing death from accidental poisoning. In the training of medical students, toxicology has been slighted in some schools. Whether or not this subject is taught in preclinical years, the responsibility for instruction in practical toxicology rests on the clinical teachers. We include in our final examinations in pediatrics a question on the source, symptoms and treatment of the commoner poisonings in children. We also provide in our emergency department copies of the Outline of Symptoms and Treatment of Poisoning by Hanzlik and Leake. To teach the prevention of poisoning, we insist that wherever possible active poisons be not prescribed where less active poisons or nontoxic substances will suffice. For example, in the treatment of ammonia dermatitis (diaper rash), we prescribe a diaper rinse of boric acid, instead of one of mercuric chloride. To keep poisons away from children, it might be wise for the physician occasionally to inspect the family medicine cabinet. Difficult as it is to interest medical students in legal matters, an effort should be made in our schools to promote interest in legislation designed to enforce proper labeling of dangerous articles, such as lye, ammonia and insecticides, and to regulate the sale directly to the public of poisonous proprietary medicines and cosmetics.

DR. C. W. WYCKOFF, Cleveland: I have had only two cases of aloin, belladonna and strychnine tablet poisoning. One patient died in strychnine convulsions, and the poisoning of the other was discovered in sufficient time to allow early and effective lavage, so that the child had only a slight increase in muscle tonicity and an enteritis. Proprietary phenolphthalein tablets are the most commonly selected by children. The color is attractive and the odor and taste are pleasant. This past winter such a case was reported in THE JOURNAL. The child died in convulsions. Fortunately, zinc stearate powder inhalation pneumonias have been greatly decreased in the last few years because of the educational efforts of pediatricians and the manufacturers arranging a spring slide top on the container. Boric acid poisoning is not uncommon. The pound package is nearly identical with that of lactose. Others are corrosive mercuric chloride tablets, selected by children because of the attractive blue color, also tincture of iodine used in place of mild silver protein, because of the similarity in the size of the bottle and the color of the contents. I believe that all physicians should make it a routine practice to caution emphatically the parents of runabouts and older children as to the dire results of accidental drug and chemical poisoning, and that all medicines and household chemicals should be kept in a locked cabinet out of the reach of children. This section might go on record as recommending to the Council on Pharmacy and Chemistry and the Bureau of Investigation and to the American Academy of Pediatrics that immediate and definite action be taken with the manufacturers, wholesalers and retailers in regard to the contents and labels and containers of all the more commonly used drugs and chemicals, and that physicians be instructed to caution parents.

DR. JOHN AIKMAN, Rochester, N. Y.: It is important that the public be informed regarding the hazards of poisoning. Proper legislation also will reduce these accidents. I attempted to get some action on strychnine poisoning three years ago and there was one editorial written which promised support; but little has been done. Children make a great effort to get into poisons. They go out of their way to get them. I had the experience one hot Sunday last summer of having to wash out the stomach of a five-year-old boy who had eaten a whole package of Ex-lax tablets that he had taken from a locked

bureau drawer. The chief danger comes from strychnine and the other pills disguised with sugar coating. The bright color of the sugar coating imitates candies. I think it is a very vicious thing to have tablets and medicines that imitate candy, because they make a dangerous trap for the innocent child. One wonders how much the pediatricians need to use strychnine. It has been shown quite definitely that strychnine in the cathartic tablet is not necessary. It is simply a shotgun prescription handed down from years back. It would be quite a job to get the manufacturers to reduce the sale of such tablets unless they can see that some other cathartic will sell better.

CARBON MONOXIDE POISONING

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Highway accidents and asphyxiations from carbon monoxide greatly exceed all other forms of violent death and the investigation of such deaths constitutes a very large and important part of the medical examiner's work.

It is now a well known fact that in the United States the automobile causes about 30,000 deaths a year and injures close to a million, with a resultant cost of many billion dollars per year. Furthermore, in the last five years little has been accomplished in the prevention of such accidents.

The total number of deaths from carbon monoxide is more difficult to estimate, since, in many localities, bureaus of vital statistics and departments of health separate suicidal from accidental asphyxiations. Further, the very low ebb to which forensic medicine has sunk in this country, owing to an ancient, politically bad coroner's system, renders investigations inaccurate and often of no value.

It may be roughly assumed, however, that there are 50,000 asphyxial deaths a year in this country, approximately 1,000 every week, and that about one half of them are caused by carbon monoxide.

In New York City, where the population is about 7,000,000, statistics are of real value, since all such deaths are reported to and investigated by the office of the chief medical examiner.

During a five year period (1928-1932) there were 5,289 deaths from carbon monoxide poisoning, an average of over 1,000 deaths a year, as shown in the accompanying table. As a cause of violent death it is exceeded only by highway accidents, which, for the same period, averaged 1,400 a year.

Certainly more than half of such deaths throughout the country are accidental and due, on the one hand, to such factors as faulty and leaky gas fixtures, carelessness and intoxication, and, on the other, to a lack of interest on the part of the public, the hospital authorities and the medical profession in quick, competent resuscitation methods.

THREE MAIN SOURCES OF CARBON MONOXIDE POISONING IN CIVIL LIFE

In civil life by far the most common source of danger is the inhalation of illuminating gas. In 5,289 deaths from carbon monoxide in New York City, 5,090 were caused by illuminating gas, 102 by automobile exhaust, 74 by coal gas and 23 from all other sources.

Illuminating or City Gas.—Illuminating gas, as now used, is a mixture of "coal gas" made by the destructive distillation of coal, containing about 7 per cent of carbon monoxide, and "water gas" made by blowing steam through hot coal and containing about from 40 to 50 per cent of carbon monoxide. This mixture contains usually about 20 per cent of carbon monoxide. Illuminating gas composed chiefly of coal gas contains much less carbon monoxide and is distinctly less dangerous.

Exhaust Gas.—Exhaust gas contains the products of combustion escaping from the exhaust pipes of automobiles, motor boats and airplanes. These vehicles are all run by engines of the internal combustion type, in which the explosion within the cylinders occurs in the presence of gasolene containing 85 per cent carbon and 15 per cent hydrogen and air containing 80 per cent nitrogen and 20 per cent oxygen. Theoretically a motor operating with 100 per cent efficiency would present no carbon monoxide in the exhaust. However, since this is impracticable, the gas is present in direct proportion to the inefficiency of the engine. In an average rich mixture the carbon monoxide content may reach as high as 7 per cent; in leaner mixtures it is proportionately less.

Henderson[1] has shown that the average car in a small one-car garage will raise the carbon monoxide content of the air in five minutes to 0.25 per cent, which is not only enough to paralyze a man in a few minutes but to cause death if preventive measures are not taken quickly. If the engine is raced, so frequently the modus operandi of suicides, death will ensue with extreme celerity.

Coal Gas.—Coal gas contains carbon monoxide that escapes into the air from the improper combustion in any stove or apparatus which burns coal, wood, charcoal or coke. It is especially apt to be present in banked coal fires, in which the air supply has been checked and a top layer of fresh coal has been added. Carbon monoxide again is formed in the top coal layers, where it may be seen burning with a pale blue flame above the layer of black coal. Much of the carbon monoxide escapes into the air and in the event of ill fitting flues the house to a greater or less extent becomes permeated. The recent tragedy among the Dartmouth students occurred in such a manner following the insidious escape of gas throughout the night into the sleeping rooms. Because of the extreme cold weather, all the windows had been closed.

OTHER MORE UNUSUAL SOURCES OF CARBON MONOXIDE POISONING

Improper combustion in any apparatus burning coal, wood, oil, gas, charcoal or coke, or in conflagrations and smoke, may occasionally be responsible for asphyxial death.

Inefficient exhaust pipes may lead carbon monoxide into the cockpit of an airplane in amounts sufficient to affect the pilot.

Sailors entering "blisters" (the false, external hulls of battleships, designed for torpedo defense) or submarine pontoons (metal drums used for raising sunken submarines) may be overcome and occasionally are killed by carbon monoxide.

Read before the Section on Miscellaneous Topics, Session on Forensic Medicine, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

From the office of the Chief Medical Examiner of Essex County (Newark), N. J., and the Department of Forensic Medicine, New York University, University and Bellevue Hospital Medical College.

1. Henderson, Yandell: The Dangers of Carbon Monoxide Poisoning and Measures to Lessen These Dangers, Report 1 of the Committee on Poisonous Gases, J. A. M. A. **94**: 179-185 (Jan. 18) 1930.

In times of war, asphyxial deaths due to carbon monoxide may occur in turrets filled with explosive gases from recoiling guns, machine gun pits, tanks, engine rooms of small war craft, and with the bursting of high explosives.

SINGLE EXPOSURE TO LETHAL AMOUNTS

Suicidal Asphyxiations.—The inhalation of illuminating gas is the most common method of committing suicide in the majority of civilized countries, because of its accessibility, cheapness and supposed freedom from pain.

In my district nearly one half of the suicides are executed in this manner; other methods of suicide, in the order of frequency being hanging, jumping from buildings, shooting, poisoning, cutting, stabbing and drowning.

The number of suicidal asphyxiations from carbon monoxide would be much larger if many probable suicides were included which, because of a reasonable doubt or from lack of proof, had to be classified as accidental.

Deaths from Carbon Monoxide Investigated by Chief Medical Examiner of New York City for Five Year Period 1928-1932

Year	Derived from Illuminating Gas			Derived from Automobile Exhaust			Derived from Coal Gas			Unusual Sources
	Accidental	Suicidal	Homicidal	Accidental	Suicidal	Homicidal	Accidental	Suicidal	Homicidal	
1928	567	520	3	12	1	0	14	0	0	1
1929	502	582	11	14	0	0	17	0	0	6
1930	413	616	13	12	1	0	22	0	0	1
1931	298	636	12	16	6	0	10	0	0	3
1932	262	649	6	25	15	0	11	0	0	12
Total	2,042	3,003	45	79	23	0	74	0	0	23
Grand total					5,289					

In New York City of 7,219 consecutive suicides reported to the Medical Examiner's Office, 3,003, or 41 per cent, were accomplished by illuminating gas, eight by automobile exhaust and none by coal gas. The small number of automobile exhaust cases may well be explained by the relative scarcity of one car garages and the great difficulty in deciding whether death was suicidal or accidental. Since there has been considerable publicity concerning the danger of running a motor in small garages, it is my opinion that most asphyxiations by automobile exhaust are suicidal in nature. In no other form of suicide can the circumstances of an accident be so closely mimicked as in the individual garage cases. Often the reliance of an astute insurance company clarifies the case when the question of payment of a double indemnity accident policy is later raised.

The suicides from illuminating gas are performed in a great variety of ways, some by turning on gas fixtures and flooding the room with gas, some by placing such instruments as paper cones and flexible hoses with or without funnels in or near the mouth, and others by leaning over gas ranges and ovens. Regardless of the method, the effect is due to unburned gas in the inhaled air.

Resuscitation methods are of little avail in most of these cases, since a suicide usually performs the act secretly and without publicity. Rigor mortis is often present when the body is discovered.

Accidental Asphyxiations.—Likewise, nearly one half of all accidental asphyxiations are caused by carbon monoxide, the remainder consisting chiefly of accidental asphyxiation due to drowning and a miscellaneous group comprising asphyxia in the new-born from such causes as overlying, smothering, postural asphyxiations and aspiration of vomitus.

In 4,677 accidental asphyxiations in New York City in a five-year period (1928-1932), 2,222, or 47 per cent, were by carbon monoxide. The carbon monoxide was from illuminating gas in 2,069 cases, from auto exhaust in 79 cases and from coal gas in 74 cases.

Accidental asphyxiations by carbon monoxide are due to a great variety of causes, the most of which are such conditions as faulty and leaky gas fixtures, flexible and worn out gas hose, carelessness, intoxication, tripping over and disconnecting a gas hose, pots boiling over and putting out a gas fire, hot water heaters and stoves without flues and quarter meters. There is practically always a direct escape of unburned gas into the surrounding air.

Furthermore, in gas stoves and water heaters it must not be forgotten that carbon monoxide may escape into the air with every hole of the burner lit. The chilling of the flame when it comes into contact with a cooking utensil or pipe containing cold water may stop the combustion at its first stage and large amounts of carbon monoxide may escape, producing low grade intoxication characterized by such symptoms as headaches and occasionally in closed rooms may cause a gradual building up of carboxyhemoglobin in amounts sufficient to produce death. To avoid this, cooking utensils and water pipes should be just above, not in, the visible flame.

In a somewhat similar manner incomplete combustion in hot water heaters without flues may occur with the escape of carbon monoxide directly into the room.

It is in this group of cases that the greatest opportunity is offered for resuscitation by means of artificial respiration and the inhalationary treatment, since they are often found shortly after the onset of asphyxiation.

It is in these accidental asphyxiations that the most important rôle is played by preventive measures, such as education of the public regarding daily hazards of carbon monoxide; abolition of badly designed stoves, flexible tubing, quarter meters and similar apparatus; efficient inspection, supervision and control of household fixtures made necessary by the increasing use of gas for heating purposes; constant warning against the danger of starting cars in small, closed garages, and proper ventilation and health regulations for workers in large garages, with the possible use of flexible exhaust tubes on cars being repaired. Since all these precautions have been described in a classic manner by Henderson,[1] it is only necessary to enumerate the most important here.

Henderson further believes that a reduction in the amount of carbon monoxide in illuminating gas is desirable and if it could be cut to one half without increasing the price it would greatly reduce accidental asphyxiations. The discovery of a less poisonous gas should be financially encouraged.

Homicidal Asphyxiations.—Committing murder by turning on the gas is not common, but it occurs with sufficient frequency to warn the medical examiner not to dispose of gas cases quickly and carelessly, without careful investigations.

Most of the homicides by gas in my experience have been caused by a person committing suicide who kills another person at the same time, either accidentally or with homicidal intent.

In New York City during this five-year period forty-five homicides were accomplished by illuminating gas.

RESULTS OF THE MEDICAL EXAMINER'S STUDY IN CARBON MONOXIDE DEATHS

It is of prime importance, from scientific, therapeutic and medicolegal aspects, to recognize two main groups of cases: (1) bodies found dead as the result of carbon monoxide from illuminating gas, automobile exhaust, coal gas or other more unusual forms of carbon monoxide asphyxiation; (2) persons resuscitated so that respiration is restored and carbon monoxide eliminated but who never regain consciousness and die in coma from one to three days later or occasionally recover.

1. *Examination of the Body.*—In bodies found dead as the result of carbon monoxide or in bodies of individuals dying a very short time after exposure, the most important and characteristic finding is the bright pink color of the skin and the postmortem lividity. This color is distinctive and not seen to such an extent in any other form of death. The face often appears natural, as if alive. Occasionally a similar color, although rarely so pronounced, may be seen in bodies exposed to extreme cold or following the ingestion of cyanide.

If the body is found lying on the back, this color will be most pronounced over the posterior parts. If the body is lying face down, the bright red lividity will be noted over the ventral surface and will shift in a short time to dependent parts if the body is turned over, provided the blood is still confined to the capillaries and postmortem decomposition has not set in.

It is important that physicians, especially ambulance surgeons, should recognize this typical color in gas poisoning and report all such cases immediately to the medical examiner.

If the medical examiner is satisfied as to the cause of death and contemplates releasing the body for burial without an autopsy, it is often wise to obtain a specimen of blood for the toxicologist by aspiration from the heart. The toxicologic examination of the blood often settles any argument as to the cause of death.

If such a body is exhumed several months or even years after death, carboxyhemoglobin may still be detected in the blood or in extracts of the organs, although the amount of saturation cannot be quantitatively estimated.

Usually the body of an individual killed by carbon monoxide remains in a state of good preservation, but I have occasionally seen instances in which the postmortem decomposition was very rapid.

Autopsy.—At the autopsy of a body found dead from carbon monoxide or of an individual dying shortly after exposure, the outstanding finding is the bright pink to cherry red of the blood and all blood-containing organs. When the body is opened this color is so pronounced that it is characteristic of carbon monoxide poisoning. The right heart and large veins of the mediastinum are distended with bright red fluid blood containing no clots. The muscles, stomach, intestine, liver, kidneys and brain all show this same bright pink.

Other characteristic changes often present are pulmonary edema with bright pink foam in the air passages and cerebral hyperemia and edema. The cerebral arterioles, capillaries and venules are frequently distended as in an injection preparation. Petechial hemorrhages occur sometimes, especially in the subcortical white matter.

2. *Clinical Course.*—If breathing has been restored by artificial respiration and inhalational treatment, such as the administration of carbon dioxide and oxygen, carbon monoxide is almost entirely eliminated in a few hours and an examination of the blood for carboxyhemoglobin in amounts known to be toxic will often be negative.

The patient, however, may remain comatose and die in from one to three days or longer without regaining consciousness. Often in these cases futile attempts are made to save the victim, such as the giving of blood transfusions and methylene blue.

Occasionally the victim eventually recovers completely. Others may develop later some form of psychosis, or even idiocy. Postasphyxial encephalitic syndromes are more apt to occur in cases in which the original period of anoxemia has been a long one and inhalational treatment for quick elimination of carbon monoxide has not been used.

Autopsy.—In the cases which result in death all chemical and spectroscopic tests for carboxyhemoglobin are negative. The correct diagnosis rests on the history of the case and the finding of bilateral degeneration in the globus pallidus of the lenticular nuclei (Kolisko's lesion), together with edema of the pia-arachnoid and parenchyma of the brain.

These bilateral areas of softening are usually from 1 to 2 cm. in diameter, elongated, brownish, and grossly resemble areas of thrombotic softening. They are caused during the period of asphyxia by the resultant anoxemia. Their peculiar location has been thought by some to be determined by the sharp right angle made by the nutrient arteries supplying this portion of the brain and the increased tendency to thrombosis in carbon monoxide poisoning. They are seen best about the third day after asphyxiation.

Freeman,[2] who has studied these lesions histologically, states that the process begins with a rather selective anemic necrosis of the anterior portion of the pallidum, which soon breaks down and becomes infiltrated with blood. Leukocytes may be found in considerable numbers about the walls of the necrotic vessels. The main processes seem to be autolysis, fatty degeneration and necrosis.

In two of my recent cases, in which intravenous injections of methylene blue were given, typical bilateral areas of softening of the lenticular nucleus were found. On exposure to the air they turned a distinct blue, the rest of the brain remaining normal in appearance. This is a beautiful example and confirms the work of Burrows[3] on the localization in inflammatory areas of certain dyes injected into the blood stream. The other organs which showed discoloration by the methylene blue were those chiefly involved in its elimination, i. e., the bladder, which was a deep blue, kidney pelves, ureters, mucosa of the stomach, colon and gallbladder which became bluish on exposure to the air.

Patients with these lesions often recover. Old healed cystic areas may sometimes be seen in patients dying from other causes years after exposure to carbon

2. Freeman, Walter: Neuropathology, Philadelphia, W. B. Saunders Company, 1933, p. 239.
3. Burrows, Harold: Some Factors in Localization of Disease in the Body, London, Baillière, Tindall & Cox, 1932.

monoxide. The degenerated material has been taken up by microglia cells that have become ballooned with fat, pigment and iron. Cyst formation with connective tissue overgrowth and encrusted vessels is the common end stage.

In addition, other parts of the brain may be similarly affected, particularly the subcortical white matter and the putamen. Rarely are these areas visible to the naked eye, and precise methods of neuropathology are necessary to demonstrate them. Freeman [2] states that sometimes the diffuse fibrosis with marked formation of new capillaries may lead to gross deformity of the cortical architecture.

I had an opportunity recently of examining sections from the cerebral cortex of a patient who, during a tonsil operation, stopped breathing for several minutes; respirations were subsequently restored, but the patient never regained consciousness and died the next day. Extensive central chromatolysis of the neurons in the deep layers of the cortex with vacuolated cytoplasm and even ruptures of the cell membranes were found, clearly demonstrating the disastrous effect of prolonged anoxemia on the brain. This lesion would have been entirely missed and the cause of death not clearly established except for careful histologic studies.

Likewise in many cases of carbon monoxide poisoning the damage to the brain is more diffuse and extensive than the gross focal lesions in the corpora striata would lead one to believe. Only careful histologic study will detect the extent of the damage done.

Such lesions undoubtedly account for the psychosis, and in some cases imbecility, following carbon monoxide asphyxiation. It is interesting to note, however, that the parkinsonian syndrome rarely occurs in these cases, in spite of the location of the gross lesions, suggesting that there is something more to the syndrome of paralysis agitans than a focal lesion in the globus pallidus.

RESULTS OF TOXICOLOGIC EXAMINATION

While the external appearance of the body together with the results of the autopsy are usually conclusive in carbon monoxide deaths, this evidence should be supported in a routine way whenever possible by spectroscopic and chemical examinations of the blood for carboxyhemoglobin.

Samples of blood for the toxicologist should be taken from the heart chambers or from the interior of the body, since samples from the superficial veins might show traces of carboxyhemoglobin in a body that was dead before it was exposed to carbon monoxide. The blood should be placed in small vials, filled to the top and tightly corked. Properly preserved specimens may be kept for years. The toxicologist Gettler has one in his laboratory taken over twenty-nine years ago which still shows carboxyhemoglobin.

In exhumed bodies, blood may sometimes be obtained either from the cerebral sinuses or by maceration of organs in cases in which it cannot be procured easily from other locations.

Qualitative tests for carbon monoxide are very good. The changing of diluted normal blood to a brown or greenish brown does not occur after the addition of a small quantity of alkali, the original pink color being persistent. The spectroscope affords another test through the identification of carbon monoxide bands, but, contrary to some opinions, it is not highly sensitive.

In medicolegal work one should no longer be satisfied with qualitative tests. Quantitative estimations showing the percentage of saturation in the blood, using preferably the methods of gas analysis devised by van Slyke, are essential for a proper interpretation of the case.

As to the amount of saturation necessary to produce symptoms it is usually stated in the literature, based chiefly on the work of Haldane and Henderson, that little inconvenience is felt until the blood is saturated about 20 per cent, that the saturation must reach 30 to 50 per cent to produce muscular weakness, incoordination and serious symptoms, and that it must be from 50 to 70 per cent to cause paralysis and death. If the saturation reaches 80 per cent it is rapidly fatal.

These figures unfortunately are based mainly on animal experimentation and Gettler [4] has never encountered in human beings a saturation higher than 65 per cent. It would seem improbable that a man could live long enough to show a saturation of 80 per cent.

In an analysis of approximately 2,000 human cases Gettler found that the saturation must reach from 18 to 20 per cent for symptoms to begin; a saturation of over 30 per cent is dangerous and most bodies found dead from carbon monoxide show a saturation of from 45 to 65 per cent. Deaths have occurred, however, with a saturation as low as 28 per cent.

These estimations of Gettler are being used constantly by the Medical Examiner's Office of New York City and Essex County as a basis for medicolegal testimony.

MODE OF ASPHYXIATION IN CARBON MONOXIDE POISONING

Death by inhalation of irrespirable gases is usually an asphyxiation, and one may, for instance, sign with accuracy a death certificate stating "Asphyxiation by illuminant gas, accidental, gas range, coffee pot boiled over."

Much, however, depends on the nature of the gas inhaled as to whether death is due to true asphyxiation, to some specific poisonous action of the gas, or to a combination of the two.

Henderson and Haggard [5] have called attention to two types of asphyxia that may be caused by the inhalation of noxious gases. In the first, which is caused by gases not usually considered as asphyxiants, for example, hydrocyanic acid gas, respiration is quickly stopped by their poisonous effects on the respiratory centers. The tissues are deprived of oxygen and the elimination of carbon dioxide ceases. In the second type, which is caused by the real asphyxiant gases, such as carbon monoxide, there is no cessation of breathing, except as a terminal event. The tissues are primarily deprived of oxygen but carbon dioxide continues to be eliminated and may be greatly depleted, as breathing with even more than normal vigor takes place. To the anoxemia is added a condition of acapnia.

It should be recalled that carbon monoxide is not truly a poisonous gas. Its fatal action is due chiefly to the replacement of oxygen. The gas itself is nonirritating and odorless.

Because the literature contains many vague references to thrombosis in carbon monoxide poisoning, recently there was called to my attention a medicolegal argument in which the so-called experts claimed that a gas asphyxiation from which the patient recovered was

4. Gettler, A. O.: Personal communication to the author.

5. Henderson, Yandell, and Haggard, H. W.: Noxious Gases and the Principles of Respiration Influencing Their Action, American Chemical Society Monograph Series, New York, Chemical Catalog Company, 1927.

responsible for the later development of an ordinary attack of coronary thrombosis.

TREATMENT OF CARBON MONOXIDE ASPHYXIATION

Henderson [6] has clearly shown that in asphyxiation by carbon monoxide the first stage is due to oxygen deficiency and the second stage to insufficient carbon dioxide caused by the rapid elimination of this gas. There is an associated compensatory decrease in the blood bicarbonates without great loss in the systemic alkali.

The treatment devised by Henderson and Haggard [5] has been so well established and has saved so many hundreds of lives that it must, for the present, be considered the method of choice. It is based on the restoration of an ample supply of oxygen and a normal amount of carbon dioxide, with a resultant normal relationship of oxygen, carbon dioxide and blood alkalis, causing the circulation, respiration, muscle tonus and mental status to return to normal.

On cessation of respiration, immediate artificial respiration by the prone pressure or other modern methods must be used. Such treatment as a mixture of oxygen and 7 per cent carbon dioxide administered by rescue squads, or up to and even higher than 10 per cent administered by qualified physicians, may be followed and continued after arrival at the hospital.

Blood transfusion, hypodermic medications, respiratory stimulants and intravenous injections are not necessary. A striking demonstration of the effectiveness of the treatment devised by Henderson and Haggard may be noted in the reduction of deaths from accidental asphyxiation in New York City during a period of five years, as shown in the table. This reduction is also due to such factors as the efforts of the Society for the Prevention of Asphyxial Deaths and better inspection of leaky fixtures by the department of health.

If respirations have been restored and carbon monoxide eliminated but the patient still remains unconscious, the treatment of the cerebral edema may be of some benefit.

The injections of methylene blue are not an antidote for carbon monoxide poisoning, since they cause the formation of methemoglobin and still further reduce the capacity of the red cells to absorb oxygen. Such injections are not only useless but may be distinctly harmful from their additional toxic effects.

SINGLE OR REPEATED EXPOSURE TO SMALL AMOUNTS OF CARBON MONOXIDE

The "Normal" Carbon Monoxide Content of the Blood.—Gettler and Mattice [7] have recently investigated the carbon monoxide content of the blood in supposed normal individuals. They state that an ideal normal individual should have no carbon monoxide in his blood but that the average person under ordinary conditions is exposed so frequently that it is not possible to regard him as being carbon monoxide free unless procedures are employed that are suitable only for the detection of large amounts. They found that the hemoglobin saturation in twelve inmates of a state institution in an ideal rural locality was usually less than 1 per cent, while the blood of eighteen persons living in New York City under conditions of minimal exposure ranged from 1 to 1.5 per cent. The saturation, however, in twelve street cleaners in New York City averaged about 3 per cent, and two taxicab drivers were found on several occasions to have a saturation of from 8 to 19 per cent. They also found that tobacco smoking appreciably increases the carbon monoxide in the blood and cannot be ignored in the interpretation of laboratory results.

The Danger of Small Amounts to Motorists.—The evidence of the existing suspicion that some of the minor ailments such as weakness, dimming of vision, and nausea, especially common in people riding in improperly ventilated cars, may be caused by small amounts of carbon monoxide, had not been proved until recently.

The first complete study of gasoline propelled vehicles from the standpoint of combustion has recently been made in Connecticut by White,[8] an engineer. The investigation was later confirmed in Massachusetts.

Briefly, the survey consisted in determining (1) the efficiency of combustion of 250,000 automobile engines and (2) the gas analysis of the interior of numerous automobiles "flagged" on the road. Sixty per cent of cars in general operation contained measurable quantities of carbon monoxide and 7 per cent contained it in sufficient quantities to cause collapse of the driver with exposures of four or more hours.

The carbon monoxide usually enters the interior of the car from its own motor or from one preceding it on the road. The increase of carbon monoxide in the car may result from obvious causes, such as a poorly adjusted engine or an ill fitting exhaust pipe.

Although carbon monoxide is odorless, sharp exhaust odors attest that there is improper combustion and furnish a priori evidence of the presence of carbon monoxide.

It is highly possible that in some of the 85 per cent of all automobile accidents with undetermined causes the dulling of the reaction time, when quick coordinated movements are required, may be due to small amounts of carbon monoxide.

In a recent case of mine, a driver in a completely closed truck drove his vehicle into the back of a parked car for apparently no reason. The assumption was that he had fallen asleep. At autopsy, in addition to the obvious traumatic injuries, a pink lividity of the body and a cherry red color of the blood were noted. The latter was subsequently shown to have a 20 per cent carbon monoxide saturation.

THE SO-CALLED CHRONIC CARBON MONOXIDE POISONING

A condition similar to overtraining in athletes, noted in mechanics in automobile repair shops, workmen in gas plants and blast furnaces, and cooks working in small, badly ventilated kitchens, and characterized by such conditions as impairment of general health, nervousness and ill temper, has been attributed by Henderson [1] to exposure to small, more or less constant amounts of carbon monoxide. However, the frequent incidence of such minor ailments in other conditions, notably alcoholic conditions, loss of sleep and chronic diseases, will always make this a moot question, and unfortunately will open another opportunity for the compensation lawyers and physicians.

6. Henderson, Yandell: Fundamentals of Asphyxia, J. A. M. A. **101:** 261-266 (July 22) 1933.
7. Gettler, A. O., and Mattice, Marjorie R.: The "Normal" Carbon Monoxide Content of the Blood, J. A. M. A. **101:** 92-97 (Jan. 14) 1933.
8. White, L. T.: Carbon Monoxide in Automobiles, Travelers Standard **22:** 41-52 (March) 1934; New England Safety Council, Boston, May 1, 1934.

ABSTRACT OF DISCUSSION

Dr. J. N. Patterson, Cincinnati: I want to ask Dr. Martland the method he used in determining the percentage of saturation of carbon monoxide in the blood; also what he thought of the accuracy of the pyrogallic-tannic acid outfit put out by the Bureau of Mines of Pittsburgh in determining the percentage of saturation of carbon monoxide in the blood.

Dr. Alexander O. Gettler, New York: In the laboratory with which I am connected we use the van Slyke method for quantitative analysis. When the amount of carbon monoxide is expected to be large, in bodies with pink coloration, we use the ordinary van Slyke method for measuring the volume of the liberated carbon monoxide. For very small amounts of carbon monoxide we make use of van Slyke's manometric method.

Dr. William D. McNally, Chicago: When the body has been dead for thirty-six hours to a week, the blood is dark and the colors cannot be compared. When the blood is old and dark, the carmine method or the dilution test cannot be used. That statement is based on thousands of examinations of blood for carbon monoxide.

Dr. Harrison S. Martland, Newark, N. J.: All analyses are referred to the toxicologist. A technic devised by Dr. Gettler, based on the well known gas analysis of van Slyke, is being used.

THE ADEQUACY OF TREATMENT IN THE CONTROL OF SYPHILIS

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The public health aspects of an attack on disease focus on two problems: first, the adequate treatment of existing cases so that they cease to be a menace to the individual infected or affected and to those about or in intimate contact with him, and, second, the prevention of the development of new cases. The latter problem, far more important, is already an accomplishment in many infectious diseases. Unfortunately, some of the most serious public health problems present insuperable difficulties in control. Because of its unique natural history, the manner of its acquisition, the long duration of its potential dangers, and for many other reasons, the prevention of syphilis as a public health measure is perhaps the most difficult problem of all.

To be sure, in time of national emergency, as during the late war, wonderful advances were made in the prevention of the spread of syphilis among the soldier population. These were accomplished, however, under conditions not applicable to civil life and by means which could be applied only to large groups of men operating under military laws. Further, while indirectly protecting the whole population, the laws were primarily concerned with the problem of keeping the male portion and only that part of military age free from infection.

This paper will concern itself with another phase of syphilis control; namely, the adequacy of modern methods of treatment in preventing the late sequelae of the disease. The full discussion of this problem quite naturally involves a taking of stock, as it were, of the advances made in the armamentarium of treatment which have occurred within the past few years. Have these indeed advanced with the frontiers of knowledge concerning syphilis, biology, pathology and natural history? Is the profession better prepared today to treat syphilis than heretofore, and can it prevent those late sequelae which up to now are the evidence in part at least of the inadequacy of its previous efforts?

With regard to the first question, I believe it may be said that, although advances have occurred in methods of treatment, these are in no way comparable to those which have enhanced knowledge of the clinical, pathologic and biologic aspects of the disease. The treatment of syphilis is still in a state of experimental flux. Each year sees some new drug or modification of the older methods advanced as the last word and each in turn is either rejected as useless or, after due trial, accepted as possibly adding something to accepted methods. In the last two or three decades the arrival of arsphenamine has been heralded a cure at one dose, of neoarsphenamine and silver arsphenamine as adjudged improvements over the older drug, of bismuth arsphenamine sulphonate and countless others, each falling far short of the anticipated promises, many rejected entirely, the remainder now carefully weighed as to what may be expected of them and added to the preexisting armamentarium at the physician's disposal. To these may now be added the definite advances achieved by the substitution of bismuth salts for those of mercury, and the application of fever therapy, artificially induced, in the treatment of neurosyphilitic accidents.

Among all the advances, one thing stands out as an axiom unchanged through centuries; that the background, the understructure on which all treatment must be laid down, is the continuous use of a heavy metal. With all the kaleidoscopic changes that have occurred in the management of syphilis, the continuous use of mercury and more latterly bismuth has been the most constant factor, and around this the modern syphilologist, until something better appears, must build his attack. Looking back over the development of methods of treatment and changes in drugs used, it may safely be said that what is now set forth as adequate or as the best treatment today may well be discarded in the not distant future, as have older methods in favor of those in use today. The last word in the treatment of syphilis is still unspoken, and the ultimate solution and the successful search for a cure comparable to that which exists for certain other infections is, I believe, something to be attained in the very remote future.

The answer to the second query, Are physicians better prepared by modern methods of treatment to prevent the late sequelae of the disease? may unhesitatingly be answered in the affirmative. While practically any system of the body may be and frequently is attacked as a late sequel, those which are economically and physically the costliest are the accidents in the cardiovascular system, the late neurosyphilitic lesions, and the multifarious manifestations which characterize the cases of heredo or congenital syphilis. The most recent investigation and thought on these dreaded complications leads to the conviction that they are for the most part preventable accidents.

During the past few years, a detailed study of clinical syphilis has been undertaken by five cooperative clinics under the egis of the United States Public Health Service. The many thousand cases seen in these several clinics have been pooled and most valuable information concerning treatment, course, complications, prog-

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nosis, effect on pregnancy, and many other phases of the disease have been gleaned and published. The results of these joint studies and a personal experience of over a quarter of a century convince me that the important factor in the causation of late accidents is inadequate treatment during the first year of the infection. Thus, the analysis of any group of late accidents, let us say of a thousand cases of cardiovascular syphilis or neurosyphilitic disease, would show a negligible percentage of these cases to have received an adequate treatment program. By adequate is not meant ideal treatment carried on over a period of two or three years, but a few months of energetic treatment with a combination of arsphenamine and heavy metal. A large number of the group indeed are represented by patients who have received no treatment whatever. Of these many again would be shown to have been maldiagnosed or unrecognized by the physicians, either passed off as soft sore (chancroid, herpes) or dismissed as nothing at all of consequence. This group thus left to infect others and to develop disabling late sequelae involving economic dependence, and in many cases premature death, are definitely preventable in the great majority, and their occurrence is an indictment against medical practice. It must be admitted, however, that a not inconsiderable number of patients with late accidents escape diagnosis and treatment not through the carelessness of the physicians but because of the unfortunate tendency of syphilis occasionally to occur early as an occult infection.

The chancre is not always an obvious phenomenon and not infrequently secondary manifestations occur in so evanescent a manner that they escape both the patient's and the physician's attention. This occult type of infection is particularly common in conjugal syphilis in women who contract their infection from a latently syphilitic husband.

The occurrence of late sequelae in this group could be prevented or cut down in numbers only if periodic health examinations, including a serologic test of the blood, were made at intervals and became a matter of general practice. Needless to say, such an examination would result in an enormous saving of life and in prolongation of economic usefulness, not only by the detection of occult syphilis but in the early diagnosis of many other organic diseases.

While the occult infected cases represent an appreciable proportion of the whole, one gains the distinct impression that the infection was either known and not treated or inadequately treated in the large majority of the cases of late sequelae.

The tremendous importance and influence of energetic adequate treatment as a preventive measure against late accidents is further borne out by the common experience of syphilologists, who over a long period of time have been able to follow their adequately treated cases through years of good health and who can testify that but a very small number of such patients contribute to the group of late accidents. This has been my personal experience and I believe it is that of others having equal or longer periods of observation of such cases.

Mention has been made of adequate treatment, and it seems that this should be defined more accurately. Adequate treatment is that amount over a specified time which has served to protect the average patient from recurrence. In a sense it is empirical, but the cooperative studies have shown that a very fair degree of protection is conferred by an amount of treatment very short of what may be considered ideal. Thus, from twenty to thirty injections of arsphenamine and perhaps double the number of injections of a bismuth compound have been shown to confer a very high rate of protection in a large group of early cases against recurrence and late accidents. This amount, however, should not be taken as axiomatic of all that may be required or approaching even the ideal. The weekly treatment over two or preferably three years with an insoluble bismuth preparation, prefaced by several courses during the first years or eighteen months of arsphenamine, is a safer course for the average physician to pursue. The damage to vital tissues does not begin late in the course of the infection. The trail is blazed in the septic period of the disease. It is in this stage that vital structures, the heart, the great vessels, the brain and the cord and all the viscera are invaded.

It is a peculiarity of Spirochaeta pallida to provoke a low grade of infection, which progresses very slowly, particularly in parenchymatous tissue and in blood vessels, thus producing a period of quiescence or latency that is equaled by no other disease and surpassed only by leprosy. It is for this reason that so many years elapse between invasion of an organ or tissue and its subsequent dysfunction from fibrous displacement or degeneration.

The energetic treatment in the invasive period, therefore, is the watchword or the best preventive measure against late tissue damage. During the early weeks and months, treatment must be vigorously and relentlessly carried out. If the early manifestations were resistant to treatment and not so easily masked by it, the prognosis would be vastly better. The ease and rapidity of the disappearance of early lesions is a factor tending to make light the seriousness of the infection to the patient and frequently undermines the vigor of the therapeutic attack on the part of the physician.

With regard to cerebrospinal late accidents, much valuable knowledge has come during the past two decades through the routine procedure of lumbar puncture during the early weeks of the infection. By this procedure it can be definitely established that cases of late cerebrospinal accident can be detected in their incipiency by changes in the spinal fluid. Conversely, it can be determined that in the main, if a patient's spinal fluid remains negative during the first year, the integrity of his nervous system is preserved and he will not fall into the group having late neurosyphilitic accidents. The demonstration of early neurosyphilis, however, calls for energetic treatment not only to the constitutional infection but directly to the system involved. The institution of one form or another of intraspinal treatment in the early period, along with the constitutional treatment, has been shown definitely to protect the individual against a late neurosyphilitic accident. Too much emphasis cannot be placed on the necessity for early and repeated lumbar puncture during the first year of the infection, not only as a diagnostic measure but as an invaluable guide to the prognosis, as pointing to involvement or integrity of the most important of all systems.

Of tremendous importance and of real therapeutic merit has been the introduction of fever therapy into the therapy of late neurosyphilis. The contribution of Wagner von Jauregg of the induction of artificial malaria in the treatment of dementia paralytica has been the outstanding therapeutic procedure of recent times.

Not only has it been extremely successful in the treatment of selected cases of brain syphilis but it has led to a much earlier diagnosis and has been found to be extremely useful somewhat outside the field for which it was first suggested. Although the information concerning its use was given to the profession only a few years ago, the theory was not hastily conceived but was based on observations extending over a long time.

The extraordinary results occasionally achieved by malarial therapy have led to the conviction in many minds that much of what was formerly regarded as dementia paralytica possibly falls into some other groups of brain syphilis. It seems now fairly established that the syndrome of dementia paralytica involving confusion of ideas and disorientation, together with the characteristic spinal fluid changes, can really be induced by syphilitic encephalitis and occasionally even by cases of cerebral edema associated with syphilitic leptomeningitis. Cases of the latter may present forms of psychosis involving character changes and behavioristic phenomena that closely simulate those due to actual degeneration encountered in late dementia paralytica. The very prompt recovery of some of these patients under malarial therapy can mean only that one is dealing with a much more acute process than occurs in dementia paralytica. I believe that out of these cases will come a clearer concept and differentiation between true dementia paralytica and cases of syphilitic psychosis with active cortical lesions.

However, it seems now evident from the cases treated with malaria that even in advanced dementia paralytica much of the confusion, disorientation and other maladjustments that make up the syndrome may not be due to permanent damage in the form of degeneration. In part, at least, they must be due in those cases which show recovery or partial recovery to acute inflammatory or edematous processes which are absorbed or disbursed as a result of the malarial treatment.

As so frequently happens with a new remedy, the malarial treatment has been found of equal usefulness in other forms of neurosyphilis. My own experience leads me to regard it as of equal value in the treatment of selected cases of tabes, notably those with intractable root pains and various forms of visceral crises which are so resistant to other forms of treatment. In these types of cases, as well as in diffuse types of cerebrospinal syphilis, it has been possible in selected cases to achieve most happy therapeutic results.

The literature during the past few years is replete with other forms of fever-inducing agents which, it is hoped, are improvements on the induction of artificial malaria. Time does not permit me to go into detail into the results of the treatment of neurosyphilis, both late and early, with fever induced by other agents, both physical and biologic. From the increasing reports, it would seem that fever itself induced from any source, either in paroxysms or continuously, is of some value in the treatment of neurosyphilis. I am still unconvinced, however, that the various newer forms of fever induction have thus far demonstrated any great advantage over the use of malaria, and I am satisfied from my own experience that the fever induced by ordinary bacteria or their products in no way compares with the results achieved by malarial inoculation.

Perhaps a word of caution might here be injected regarding the risks of fever therapy. There are certain definite contraindications to its use, particularly advanced age, cardiac lesions and other organic disease. Even under the most careful selection, the treatment occasionally not only fails but under certain circumstances may be attended by a fatal outcome.

During the last few decades there has been a great advance in the methods and results of treatment in that large group of innocent victims of syphilitic disease who acquire their infection in utero. Much valuable information has been gained concerning the treatment of the expectant syphilitic mother, and it can definitely be stated that, in the majority of cases in which the treatment is begun during the early months of pregnancy, not only are the chances of a living child enormously enhanced but the many developmental structural defects as well as the active syphilomas that characterize the syphilized child can be definitely prevented. The intelligent treatment of a syphilitic mother and the effect of this treatment on the unborn child, as carried out along modern lines, represents a most gratifying stride toward therapeutic effectiveness. It is safe to predict that, if physicians at large applied to the treatment of syphilitic expectant mothers the principles laid down as a result of the studies of the cooperative group, the vast numbers of syphilitic children seeking relief from the unfortunate sequelae of their inherited infection would be enormously decreased, as would also the fetal mortality from intra-uterine infection.

Considerable progress has been achieved also in the successful treatment of children not treated during intra-uterine life but developing the stigmas and manifestations of intra-uterine infection and presenting themselves with the many-sided pictures, both developmental and active, of congenital syphilis.

Modern studies teach that even the worst case of interstitial keratitis, the most common and the costliest form of congenital syphilis, can be successfully treated and children restored to useful and independent life through the prolonged and energetic treatment of their condition. It is in these forms of congenital syphilis that a drum fire of attack must be directed against the infection. Not only are the arsphenamines and bismuth compounds necessary over a long period of time, but it is in these cases particularly that the iodides in combination with the others are of greatest use. Coupled with this form of treatment, there is special ophthalmologic treatment involving continuous midriasis.

The unfortunate cases of blindness due to interstitial keratitis are for the most part preventable occurrences. Through long continuous treatment, at times attended by repeated recurrences, these conditions can be successfully treated and for the most part with a workable amount of visual restoration. Looking back over thousands of cases treated, I count as one of the happiest therapeutic results those cases in which syphilitic women through energetic treatment have given birth to healthy infants, and the hundreds of malformed and partially or totally blinded children, for the most part mentally normal, who have been restored to a useful and normal life through the prolonged use of modern methods of treatment.

As stated before, the treatment of syphilis is still in a state of constant flux. The happy results achieved during the last three decades as a result of the pooled experience of observers in different parts of the country, and as a result of newer methods involving not only new drugs and new procedures but also greater refinement in early diagnosis, lead to the conviction that the next few decades will see, if not the last word, at

least equally great progress in the treatment of already infected patients.

The prevention of syphilis from the public health standpoint is a major problem deserving of the greatest effort on the part of the agencies concerned with the prevention of diseases.

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INTESTINAL PARASITIC WORMS IN THE UNITED STATES

THEIR DIAGNOSIS AND TREATMENT

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The search for drugs for the expulsion of the large worms of man is very old. Old accounts list many drugs and heroic treatments devised to expel Ascaris and tapeworm. Since the hookworm epidemic among workers building the famous St. Gothard tunnel some fifty years ago, many drugs for the treatment of hookworm disease have been introduced. The discovery by C. W. Stiles of the wide prevalence and pathologic significance of hookworm disease in this country and the organization by the Rockefeller Foundation of treatment campaigns against this disease led to the treatment of millions of cases. Likewise, large numbers of persons harboring Ascaris, whipworm, tapeworm and pinworm have been treated with various drugs. There are, therefore, certain groups who have had considerable experience in the treatment of these parasitic infestations. Much has been written about the drugs used in the treatment of these various infestations, but most of the articles are written for those specializing in the treatment of parasitic diseases and lack certain basic information that is necessary for those less acquainted with the various factors involved. For this reason, I have brought together in as concise a form as possible data which should be of help to the general practitioner in the treatment of individual cases of infestation by any of the common intestinal helminths found in the United States.

The ridding of a patient of intestinal parasites has for centuries been considered a serious procedure, and violent methods have been used to that end. One reads of long periods of pretreatment starvation and purgation, followed by the administration of the drug and then by another period of terrific purgation. Much of this treatment was felt necessary owing to the inefficiency of many anthelmintics, and it is not surprising that the treatment of intestinal parasites was carried out with a good deal of dread because of the danger of such procedures. All the older and more commonly used anthelmintics are occasionally quite toxic, and it is well known that each causes severe intoxication in certain individuals, this usually being ascribed to the idiosyncrasies of the patient. Although thousands of cases have been treated with some of these substances without a fatality or definite signs of intoxication, severe injury and even death have followed without any warning the administration of these anthelmintics in proper therapeutic amounts to apparently normal individuals.

During the past ten years there have been found for the treatment of certain types of intestinal helminths several new substances which are fully as effective as any of the older remedies and which, as far as is known at present, can be given without fear of intoxication. On the other hand, there are no effective and safe drugs for all types of intestinal helminths. I shall outline the various treatments that have been found most effective and point out the dangers inherent in such forms of treatment.

For successful treatment of patients harboring helminths, one must consider the life cycle of the pasasite, the method for determining its presence, the substances that may be used most successfully against a particular parasite and the details of their administration, as well as methods of estimating the effectiveness of treatment. It should be remembered that these various species of parasites of such extremely different types must be considered and treated individually, for a drug that will remove practically 100 per cent of one type of parasite may be ineffective against another.

DIAGNOSIS OF THE PRESENCE OF INTESTINAL HELMINTHS

Since all the common intestinal helminths to be described, with the exception of Trichinella, can be diagnosed by examination of the stool for the worms or their eggs, it is inexcusable to treat a person for worms unless a positive diagnosis has been made. Diagnosis of worms from symptoms alone is likely to be very inaccurate, and it is not at all scientific after such a haphazard diagnosis to subject a patient to treatment that may be very disagreeable.

The common intestinal helminths found in this country which I shall consider are the hookworm, Necator americanus; the roundworm, Ascaris lumbricoides; the whipworm, Trichuris trichiura; the pinworm or seatworm, Enterobius vermicularis; Strongyloides stercoralis; Trichinella spiralis; the beef and pork tapeworms, Taenia saginata and Taenia solium; the fish tapeworm, Diphyllobothrium latum, and the dwarf tapeworm, Hymenolepis nana.

The presence of these worms can be determined by (*a*) eggs in the stool, hookworm, Ascaris, Trichuris, Diphyllobothrium, and Hymenolepis; (*b*) eggs or segments in the stool, Taenia saginata and T. solium; (*c*) worms in the stool or about the anus of the patient at night, occasionally eggs in the stool, Enterobius; (*d*) larvae in the stool, Strongyloides, and (*e*) adult worms in the stool during the first week of infestation, or larvae in excised muscle and spinal fluid after the first week, Trichinella. Marked eosinophilia, diarrhea, muscle cramps and edema of the lids are important diagnostic aids.

The simplest method of finding eggs is to examine a fecal smear on a glass slide. In preparing a smear, a small bit of the feces to be examined should be mixed with water on an ordinary glass microscopic slide. The smear should be mixed with enough water so that ordinary print can be seen through it. If the smears are too dense, it will greatly lessen the chance of finding the eggs. The accuracy of the smear method depends on the number of slides examined. A single smear will disclose heavy infestations, but to detect lighter cases a number of slides must be examined. If no eggs are found by the smear method, it is well to stir up in a small container a gram of feces in 20 cc. of saturated salt solution and allow it to stand for from fifteen to twenty minutes. The eggs will float up to the surface and can be transferred to a slide by touching the mouth

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of an inverted test tube to the surface of the fecal flotation mixture. Unfortunately, operculate or porous eggs do not float in a salt solution, so this method is not satisfactory for the detection of Diphyllobothrium or Taenia. Since ascarids pass an enormous number of eggs, several negative smears indicate that no ascarids are present. One should, however, remember that in very rare cases one or more male ascarids may be present but overlooked, owing to the absence of eggs. Since hookworms, Hymenolepis, Diphyllobothrium and Trichuris pass fewer eggs than Ascaris, a more careful examination is necessary to prove the presence of these parasites. However, if several smears and the flotation examination are carefully carried out and no eggs are found, it may be assumed that the patient has no worms or that there are probably not a sufficient number present to be of pathologic significance. Those interested in diagnosing very lightly infested persons should refer to the method of Lane. His method, though very accurate, involves the use of apparatus too expensive for the average physician who has only an occasional case to diagnose.

The two tenias and the pinworm do not pass their eggs regularly and, because of this, several whole stools passed over a period of several days should be examined both macroscopically for tapeworm segments or adult pinworms and microscopically for eggs of both worms before one feels certain that none of these parasites are present. In case of negative stools a magnesium sulphate purge may often be of help in causing the passage of tapeworm segments or adult pinworms. In cases in which tapeworms and pinworms are suspected, it is well to instruct the patients to inspect their stools for segments or wormlike material, which should be brought to the physician. If the suspected material is unrecognizable, it can be macerated with water and examined microscopically for any contained eggs. Inspection of the perianal region an hour after the patient has retired will sometimes reveal adult pinworms, and perianal scrapings examined microscopically will often disclose pinworm eggs.

Many states have laboratories where fecal diagnosis is a part of the routine and where specimens may be sent for examination. The accompanying illustration of the different types of eggs is given for those unfamiliar with them.

PURGATION IN ANTHELMINTIC TREATMENT

Adequate purgation following most anthelmintics is of great importance and may aid in several ways. Macht and Finesilver [1] have shown that the absorption of many drugs is decreased by the administration of sodium sulphate solutions. Likewise, the purge may hasten the elimination of the unabsorbed anthelmintic or aid in its distribution along the intestinal tract, preventing local injury and allowing it to come in contact with worms far down in the intestine. The purgative should be given as early as is consistent with the efficacy of the anthelmintic, or sooner if safety requires it.

Purges should be given in large enough quantities to produce results, and it is inadvisable to give them in small or divided doses. In case the first purge does not act within three to four hours and the patient shows signs or symptoms of toxicity from the anthelmintic, purgation should be repeated and aided by enemas. One must use judgment in this matter, however, for patients have been exhausted and their lives endangered by terrific purgation following anthelmintic administration. After the use of certain drugs, intestinal obstructions caused by Ascaris have been found at operation or autopsy, and no purge should be given to patients suspected of having intestinal obstruction. Violent purgation during pregnancy is contraindicated. The patient should not eat until the purge has acted. In persons whose bowels are constipated the intestinal tract should be opened up with a purge and enema the day before anthelmintic administration. A dose of 30 Gm. (1 ounce) of magnesium sulphate is satisfactory for an adult. Children's doses can be calculated on a basis of 2 Gm. of magnesium sulphate for 10 pounds (4.5 Kg.) of weight, which is approximately a teaspoonful for each 20 pounds of weight. The salts should be dissolved in a glass of water, and I have found that children complain less when it is followed by a small amount of sweetened water to take the taste out of the mouth.

Some advocate the substitution of sodium sulphate for magnesium sulphate on the basis that sodium is less toxic than magnesium. Theoretically, this may be of importance in treatment with carbon tetrachloride wherein the calcium balance is important, as it is known that magnesium is antagonistic to calcium. Practically, however, many persons object to the disagreeable taste of sodium sulphate and it is difficult to persuade children to take a full dose of it.

HOOKWORM, NECATOR AMERICANUS

The adult hookworms are found throughout the small intestine, and the females pass from 5,000 to 10,000 eggs daily. These eggs passed out with the stool develop rapidly in moist, warm soil and in several days contain active larvae which force their way out of the egg shells and, after undergoing further development over a period of about a week, are capable of infecting man. Infection occurs when the bare feet or hands come in contact with the infective larvae, which penetrate the skin, effect an entrance into lymphatics or veins, and are carried to the right side of the heart. The larvae on being carried to the lungs rupture the capillaries and force their way into the alveoli. They migrate by way of the bronchi up the trachea to the pharynx, are swallowed and pass to the small intestine, where they attach themselves and grow to maturity. Adult worms are about one-half inch in length. The period necessary for the development of these parasites to the egg-laying age after infection is approximately six weeks. It has been shown that the hookworm obtains nourishment by sucking the blood of its host, and it is believed that hookworms live as long as several years.

Thymol, betanaphthol, oil of chenopodium, carbon tetrachloride and tetrachloro-ethylene have been given to hundreds of thousands of patients. Thymol in therapeutic doses often produces unpleasant symptoms, such as extreme dizziness and vomiting. Oil of chenopodium is a definitely toxic substance when given in an overdose. Given in the accepted therapeutic dose, it may cause many symptoms ranging from giddiness and dizziness to severe collapse and, in certain cases, its administration has been followed by death. Betanaphthol has been used less extensively on account of its well known toxicity. Carbon tetrachloride is very effective but may produce severe central necrosis of the liver, even in moderate doses. In spite of this, millions

1. Macht, D. I., and Finesilver, E. M.: The Effect of Saline Purgatives on the Absorption of Other Drugs, Bull. Johns Hopkins Hosp. 33: 330 (Sept.) 1922.

of persons treated with this substance have had no serious signs or symptoms, but occasional deaths are reported following its use, especially in debilitated or alcoholic persons. There seems to be no reason for using carbon tetrachloride in the treatment of hookworm disease, as tetrachloro-ethylene, which was introduced by Hall and Shillinger [2] and which belongs to the same series of halogenated hydrocarbons, is fully as effective and apparently nontoxic. Tetrachloro-ethylene has been given to enormous numbers of patients without any signs of intoxication. Lambert [3] recently reported the successful treatment in 46,000 cases, using from 2.8 to 4.0 cc. of tetrachloro-ethylene in adults. In therapeutic doses, it produces no liver damage and, therefore, differs from carbon tetrachloride. The intoxications following carbon tetrachloride are secondary to guanidinemia following liver damage. Crystalline hexylresorcinol has recently been introduced into medicine as an anthelmintic, and, although it is less effective than tetrachloro-ethylene against hookworm, it has the advantage, as will be pointed out later, of removing also a high percentage of Ascaris. This drug will be discussed under ascariasis.

TREATMENT OF HOOKWORM DISEASE WITH TETRACHLORO-ETHYLENE

(*a*) *Preparation of the Patient.*—No preliminary measures need be taken before treatment. If one wishes, one may give a light evening meal followed later in the evening by a saline purge, in the hope that the intestinal tract will be emptied and thus allow the drug to come in closer contact with the worms.

(*b*) *Administration of Tetrachloro-Ethylene.*—Treatment should be carried out in the morning, and breakfast must be omitted. The usual adult dose of tetrachloro-ethylene is 3 cc., although some workers have given 4 cc. to large numbers of persons.[4] Children may be given 0.2 cc. for each year of age up to 15 years. The drug should be given in a single dose in either of the following ways:

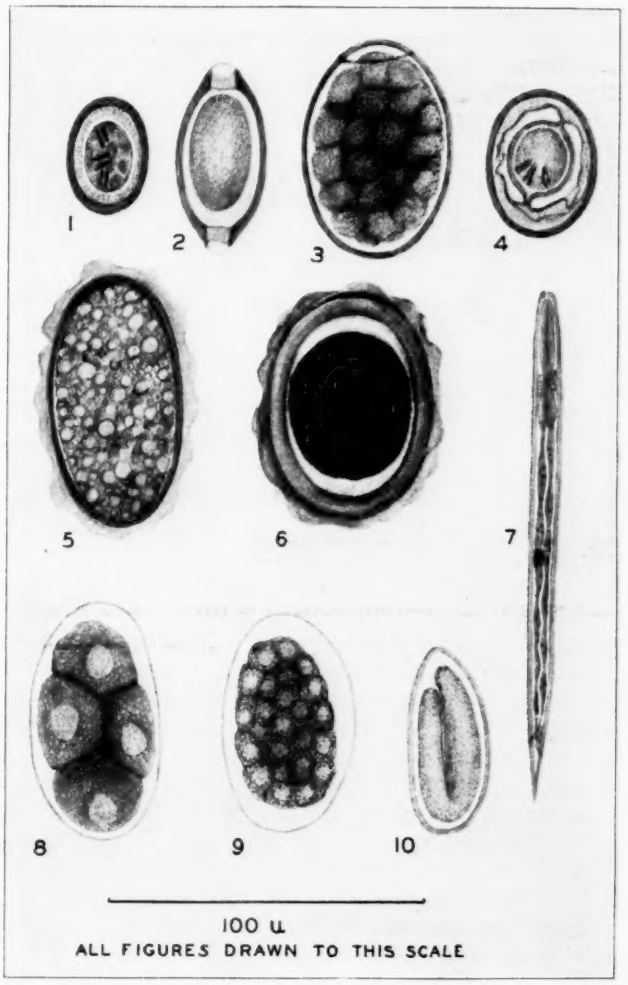
1. A purgative of magnesium sulphate should be dissolved in half a glass of water and the liquid tetrachloro-ethylene added to this and the whole shaken up and swallowed at one time. Any of the drug adhering to the glass should be rinsed off with additional water and taken.

2. Tetrachloro-ethylene may be given in hard gelatin capsules followed at once by the magnesium sulphate purge. The patient should rest and wait until the purge acts before eating. In some cases a second purge may be necessary to produce a bowel movement.

(*c*) *Signs and Symptoms.*—Pharmacologic studies [5] have failed to show any changes following reasonable doses of tetrachloro-ethylene that would indicate a toxic action. This substance, like chloroform, belongs to the group of anesthetics, and it is possible to anesthetize an animal completely by the inhalation of tetrachloro-ethylene vapor. It is obvious that in certain individuals absorption of tetrachloro-ethylene may take place and cause slight dizziness and feelings of giddiness such as one might feel after the absorption of any anesthetic substance. This, however, should not be taken as an indication of intoxication, and the patient may be told that such slight disturbances may be expected.

(*d*) *Contraindications.*—Although tetrachloro-ethylene is apparently nontoxic even after absorption, as shown by the absence of pathologic changes in dogs following its inhalation for several hours, it is well to avoid absorption and therefore best to refrain from taking fats or alcohol just before or just after treatment, as both of these substances are known to cause an increased absorption of similar compounds.

(*e*) *Efficiency.*—A stool examination should be made about two weeks after treatment. This delay allows time for any worms that may not be killed, but have had their egg-laying temporarily inhibited, to regain this function. If no eggs can be found in several carefully examined fecal smears or in a flotation preparation, the patient is, for all practical purposes, cured. Various workers report from 77 to 97 per cent of hookworms removed by a single treatment of tetrachloro-ethylene.[6]



Eggs and larvae of important American human helminths. (Original by Mrs. J. T. Lipe.) 1. Taenia saginata (Taenia solium is very similar). 2. Trichuris trichiura. 3. Diphyllobothrium latum. 4. Hymenolepis nana. 5. Ascaris lumbricoides (unfertilized). 6. A. lumbricoides (fertilized). 7. Strongyloides stercoralis. 8, 9. Necator americanus. 10. Enterobius vermicularis.

2. Hall, M. C., and Shillinger, J. E.: Tetrachlorethylene, a New Anthelmintic, Am. J. Trop. Med. **5**: 229 (May) 1925.

3. Lambert, S. M.: Hookworm Disease in the South Pacific, J. A. M. A. **100**: 247 (Jan. 28) 1933.

4. Lambert,[3] Maplestone, P. A., and Mukerji, A. K.: Carbon Tetrachlorethylene in the Treatment of Hookworm Infection, Indian M. Gaz. **68**: 617 (Nov.) 1933.

5. Lamson, P. D.; Robbins, B. H., and Ward, C. B.: The Pharmacology and Toxicology of Tetrachlorethylene, Am. J. Hyg. **9**: 430 (March) 1929.

6. (*a*) Kendrick, J. F.: The Treatment of Hookworm Disease with Tetrachlorethylene, Am. J. Trop. Med. **9**: 483 (Nov.) 1929. (*b*) Schapiro, Louis, and Stoll, N. R.: Preliminary Note on the Anthelmintic Value of Tetrachlorethylene Based on Egg Counts Before and After One Treatment, Am. J. Trop. Med. **7**: 193 (May) 1927. (*c*) Soper, F. L.: Tetrachlorethylene in the Treatment of Hookworm Disease, Am. J. Trop. Med. **6**: 451 (Nov.) 1926.

TREATMENT OF HOOKWORM DISEASE WITH HEXYLRESORCINOL

Tetrachloro-ethylene is more effective than hexylresorcinol in the removal of hookworms and for mass treatment is the drug of choice. It does, however, produce a marked feeling of giddiness in many. For this reason, I feel that in the treatment of individual cases, especially children and debilitated and pregnant persons, hexylresorcinol is very useful. In therapeutic doses it usually produces no unpleasant symptoms, and those treated may go about their usual occupations. The purge is usually given twenty-four hours after the hexylresorcinol but may be entirely omitted without impairing the efficiency or safety of the treatment. If desired, a laxative such as phenolphthalein may be substituted for the more violent purge. Although one treatment will remove approximately 70 per cent of the hookworms, a number of patients will be cured by a single treatment, and, as hexylresorcinol is not unpleasant to take, it can be repeated several times until the patient is cured. The method of administration is described under hexylresorcinol treatment of ascariasis.

TREATMENT OF HOOKWORM DISEASE WHEN ASCARIS ALSO IS PRESENT

It has been shown that treatment with carbon tetrachloride of hookworm patients who also harbor Ascaris is sometimes complicated by the fact that the ascarids are vomited, passed through the nose or migrate in such large numbers that they block the respiratory passage and, in other instances, form masses of worms that cause intestinal obstructions. Since it is possible that tetrachloro-ethylene may act similarly, it is advisable to remove Ascaris before treating with tetrachloro-ethylene.

For the treatment of patients harboring both Ascaris and hookworm, hexylresorcinol is particularly effective, as it will remove practically all the ascarids and about 70 per cent of the hookworms with a single treatment. This drug has the further advantage that it kills the ascarids and prevents their migrating or forming in masses and producing intestinal obstruction. Although a single treatment with hexylresorcinol is not as effective against hookworm as one dose of tetrachloro-ethylene, it can be repeated, and two treatments will remove from 85 to 90 per cent of the hookworms and usually all the ascarids. None of the patients who have had repeated treatments with hexylresorcinol complained of any unpleasant symptoms, and I have no reason to believe that such treatments are dangerous. The method of treatment with hexylresorcinol is described in the section on the treatment of ascariasis with hexylresorcinol.

Some workers recommend the use of a mixture of oil of chenopodium with tetrachloro-ethylene, which will remove Ascaris and hookworm simultaneously. The usual procedure,[7] if oil of chenopodium is to be used with tetrachloro-ethylene in mixed infestations of hookworm and Ascaris, is to give in one dose a mixture of 0.05 cc. of chenopodium for each year of age up to 20 years and 0.1 cc. of tetrachloro-ethylene for each year of age, an adult dose being 1 cc. of oil of chenopodium plus 2 cc. of tetrachloro-ethylene. This should be followed in an hour by a magnesium sulphate purge and nothing should be eaten until the patient's bowels have moved. The combined oil of chenopodium and tetrachloro-ethylene treatment[8] will remove as high as 98 per cent of the hookworms and approximately 65 per cent of the ascarids. It should be remembered, however, that oil of chenopodium, owing possibly to idiosyncrasies of some patients, is at times very toxic.

7. Lambert.[3] Kendrick.[6] Schapiro and Stoll.[6] Soper.[6]

LARGE ROUNDWORM, ASCARIS LUMBRICOIDES

The female Ascaris lumbricoides passes approximately 200,000 eggs a day. These eggs develop in the soil and become infective after a period of two weeks or more. The eggs are swallowed and pass to the small intestine, where the larvae emerge from the shells, penetrate into the lymphatics or venules of the intestinal wall and are carried by the blood stream to the right side of the heart and from there to the lungs, where they migrate out of the capillaries into the alveolar spaces, crawl into the bronchi, and then pass up the trachea into the esophagus and are again swallowed and carried to the small intestine, where they develop in six weeks into adult worms. Adult worms vary from 8 to 14 inches in length. They are not blood suckers but feed on the intestinal contents and probably live from six months to a year. Ascarids are not always harmless parasites and they are a source of danger because of their wandering habits. Many cases have been reported of their presence in the bile ducts, liver, pancreatic duct and pancreas. Likewise, they have been found in masses causing intestinal obstruction and have even caused a fatal peritonitis by piercing the intestinal wall.

Numerous substances have been used for the treatment of ascariasis. Santonin has been used for centuries and is moderately effective in safe doses, but it is somewhat expensive. Oil of chenopodium has been extensively used for the past twenty years and is very effective against both Ascaris and hookworm. It has been used in literally millions of cases,[9] but a number of deaths have been reported following its use, and it is considered a dangerous drug, as one never knows when death may occur from its use. The active and toxic principle of oil of chenopodium is called ascaridole, and, unfortunately, various samples of oil may vary as much as 75 per cent in ascaridole content. Because of this, one is never sure how much ascaridole a dose of oil of chenopodium contains, and collapse and death have followed therapeutic doses of this substance.

Because of the lack of a safe and effective ascaricide, my associates and I have spent several years in attempting to find a drug that could be used with less danger. In 1930,[10] such a drug was found in hexylresorcinal. This drug is not effective against Ascaris in the forms in which it is put on the market; namely, as Caprokol, an olive oil solution of the drug, or as Hexylresorcinol S. T. 37, a glycerin preparation. In such solutions the hexylresorcinol remains in solution and does not attack the parasite. However, it has been given in the form of pills of crystalline hexylresorcinol in several thousand cases and found to be very effective, a single dose removing between 90 and 100 per cent of Ascaris. It is an apparently harmless substance to take in this manner. It has been given in more than 200,000 cases in the form of the oil solution as a urinary antiseptic for

8. Kendrick.[6] Schapiro and Stoll.[6]

9. Molloy, D. M.: Notes on the Pharmacology and Therapeutics of Oil of Chenopodium and Investigations on the Anthelmintic Value of Its Components, J. Pharmacol. & Exper. Therap. **21**: 391 (July) 1923. Heiser, V. G.: The Administration of Chenopodium, Mil. Surgeon **41**: 253 (August) 1917.

10. Lamson, P. D.; Ward, Charlotte, B., and Brown, H. W.: An Effective Ascaricide-Hexylresorcinol, Proc. Soc. Exper. Biol. & Med. **27**: 1017 (June) 1930.

days and even months in doses much larger than the single administrations that we have suggested for the treatment of parasitic infestations. Thus far, no deaths or serious intoxications have been reported from the use of hexylresorcinol. There is, however, one serious drawback to its general use: If the pills are chewed up, they cause severe local irritation of the mucous membranes of the mouth with loss of taste and discoloration of the lips and face if the saliva containing the drug comes in contact with these tissues. This irritation is, however, entirely superficial and the patient recovers from it within a few days, but its occurrence caused so much criticism of the manufacturers when they put this substance on the market for general use that it has been withheld until some method of administration can be devised that will make it impossible for patients or physicians who do not follow instructions as to its use to obtain such annoying results.

TREATMENT OF ASCARIASIS WITH HEXYLRESORCINOL

(*a*) *Preparation of the Patient.*—The one precaution that must be taken with hexylresorcinol is to be certain that the intestinal tract is empty when the drug is given, as hexylresorcinol will combine with food and have little action on the parasite. For this reason it is advisable for the patient to eat only a light supper on the evening before treatment. If the patient also harbors hookworm, a magnesium sulphate purge may be taken after the evening meal.

(*b*) *Administration of Hexylresorcinol.*—The following morning, breakfast should be omitted and the patient treated early. The dose of hexylresorcinol is 0.1 Gm. for each year of age up to 10 years, the adult dose of 1 Gm. being given to those over 10 years of age. Hexylresorcinol should be given in the form of pills and swallowed with a little water. If children are treated, it is essential to see that the pills are actually swallowed and that none remain in the mouth to be chewed later. If the child is unable to swallow the pills, they can be easily pushed down the throat by any competent physician. In no case should the pills be entrusted to parents who may administer them carelessly, for if the pills are chewed up they will be certain to cause a superficial, annoying burn. The patient may be allowed to drink as much water as he pleases and go about his daily routine as long as he refrains from eating for five hours after treatment. A magnesium sulphate purge is given on the following morning to hasten the expulsion of the dead worms.

(*c*) *Signs and Symptoms of Toxicity.*—In most cases there is no discomfort whatever after taking this drug, patients going about their usual daily routine and children carrying on their work at school without any complaint. A few patients may complain of slight abdominal discomfort or nausea and very rarely a patient may vomit, but these cases are often associated with the patient's having eaten against advice after the administration of hexylresorcinol. A few notice a marked cathartic action after taking the drug.

(*d*) *Contraindications.*—Except for the local irritation, I know of no contraindications to the use of hexylresorcinol. Alcohol has been taken after the administration of this substance without apparently causing increased irritation, but I would suggest that alcohol be avoided during the period of treatment.

(*e*) *Efficiency.*—The ascarids are not all passed immediately after treatment but may appear in the stool over a period as long as ten days. Therefore the post-treatment stool examination should be delayed for two weeks from the date of treatment. If eggs are still present, a second treatment can be given. In our large series of cases studied by the Stoll egg-counting method, from 90 to 100 per cent of all the ascarids were removed with a single treatment and approximately 70 or 80 per cent of these patients became completely free from these parasites.[11] After two such treatments, from 93 to 98 per cent were completely cured.[12] Hexylresorcinol also removed approximately 70 per cent of the hookworms and 30 per cent of the whipworms.

TREATMENT OF ASCARIASIS WITH OIL OF CHENOPODIUM

(*a*) *Preparation of the Patient.*—The patient eats a light evening meal and, if the bowels are constipated, a saline purge is given on the evening before treatment, and a soapsuds enema just before treatment in the morning is advised. The patient should remain in bed during the treatment.

(*b*) *Administration of Oil of Chenopodium.*—Although 3 cc. of this oil has been given to hundreds of thousands of patients, it is agreed by those who have had the most experience with this drug that the total adult dose of 1.5 cc. is the maximum that should be given.[13] The doses for children are shown in the accompanying table.

As an overdose of the oil of chenopodium may be toxic and as different samples of oil of chenopodium vary greatly in viscosity, the dose should always be measured and never given by drops. (Different droppers deliver from 18 to 70 drops per cubic centimeter of this substance.) Considerably larger doses of the oil than those just shown have been given in a large number of cases,[14] but both the number of intoxications and their severity increase with increase in the size of the dose. The oil of chenopodium should be given in hard, gelatin capsules, divided into two equal doses, administered two hours apart. One hour after the second dose of chenopodium a magnesium sulphate purge should be administered. Small children who cannot swallow a capsule may be given the drug on sugar. The patient should be kept under observation during treatment and if symptoms arise after the first dose the second dose of oil of chenopodium should be omitted and the purge given at once. No food is allowed until after the bowels have moved. As children are especially susceptible to toxicity from oil of chenopodium, many workers prefer to mix the chenopodium with castor oil, which apparently decreases its toxicity and also its efficacy against Ascaris. The total dose of oil of chenopodium should be disssolved in castor oil and given as a single dose. From 1 to 2 cc. of castor oil for each year of age is adequate for this treatment. A magnesium sulphate

11. Lamson, P. D.; Brown, H. W.; Robbins, B. H., and Ward, C. B.: Field Treatments of Ascariasis, Ancylostomiasis and Trichuriasis with Hexylresorcinol, Am. J. Hyg. **13:** 803 (May) 1931. Molloy, D. M.: The Treatment of Hookworm and Other Intestinal Helminth Infections with Hexylresorcinol Under Field Conditions in Central America, South. M. J. **26:** 575 (July) 1933.

12. Molloy.[11] Brown, H. W.: The Treatment of Ascariasis and Trichuriasis with Hexylresorcinol Pills, Am. J. Hyg. **16:** 602 (Sept.) 1932.

13. Darling, S. T., and Smillie, W. G.: The Technic of Chenopodium Administration in Hookworm Disease, J. A. M. A. **76:** 419 (Feb. 12) 1921. Darling, S. T.; Barber, M. A., and Hacker, H. P.: Treatment of Hookworm Infection, J. A. M. A. **70:** 499 (Feb. 23) 1918. Smillie, W. G., and Pessôa, S. B.: A Study of the Anthelmintic Properties of the Constituents of the Oil of Chenopodium, J. Pharmacol. & Exper. Therap. **24:** 359 (Dec.) 1924.

14. Molloy.[9] Heiser.[9] Caius, J. F., and Mhaskar, K. S.: The Correlation Between the Chemical Composition of Anthelmintics and Their Therapeutic Values in Connection with the Hookworm Inquiry in the Madras Presidency: II. Oleum Chenopodii, Indian J. M. Research **7:** 570 (Jan.) 1920.

purge should be given if the castor oil purge does not act within several hours. It is felt by some who have had considerable experience in the administration of the oil of chenopodium that free purgation following treatment is of the utmost importance in order to avoid absorption of the drug and toxic manifestations.

(*c*) *Signs and Symptoms of Toxicity.*—A great many disturbances, even deaths, have been reported after the use of oil of chenopodium. The most striking phenomenon is general collapse, which may occur several hours after treatment. Other cases will show vomiting, dizziness, tingling of the hands and feet and muscular incoordination. Severe deafness, even permanent deafness, has followed the use of oil of chenopodium. A liberal diet of carbohydrates for several days previous to treatment is said to reduce the frequency of toxic symptoms.

(*d*) *Contraindications.*—The use of oil of chenopodium is contraindicated in very young children, persons suffering from renal disorders or severe malnutrition, and during pregnancy. In gastro-intestinal disorders it should also be given with caution. Persons suffering from chronic constipation should have the bowels opened by a saline purge and soapsuds enema before treatment with oil of chenopodium.

(*e*) *Efficiency.*—Different workers who have treated moderately large series of cases with oil of chenopodium report that from 70 to 99 per cent of Ascaris is removed by a single treatment and from 35 to 96 per cent of the cases will be found negative.[15] If Ascaris eggs are found in the stools two weeks after treatment, a second treatment may be given; but to avoid cumulative effects in no case should chenopodium be given before the lapse of at least two weeks. Approximately 60 to 70 per cent of the hookworms harbored are removed by a single treatment. Likewise, numbers of Trichuris, Enterobius and Hymenolepis are removed by this drug.

Dosage of Oil of Chenopodium for Children

Age, Years	Dose, Cc.	Age, Years	Dose, Cc.
4	0.2	13–14	0.8
5–6	0.3	15–16	1.0
7–8	0.4	17–18	1.25
9–10	0.6	19–20	1.5
11–12	0.7		

THE TREATMENT OF ASCARIASIS WITH SANTONIN

Santonin has been a favorite remedy against roundworms for many years. It is very insoluble, nonirritating and almost tasteless and is therefore quite easily administered to children. It may be mixed with sugar to facilitate administration. It should be borne in mind that santonin is a toxic drug which may produce serious poisoning.

(*a*) *Preparation of the Patient.*—The patient should be given a light evening meal at 5 p. m., no food being allowed after that.

(*b*) *Administration of Santonin.*—At 10 p. m. the santonin should be given with an equal amount of mild mercurous chloride. Tablets containing one-half grain (0.03 Gm.) of santonin and an equal quantity of mild mercurous chloride are on the market. For children a dose of one-sixth grain (0.01 Gm.) for each year of age is well tolerated. For adults from 3 to 5 grains (0.2 to 0.3 Gm.) may be given.[16] Early the following morning (between 6 and 7 a. m.) a magnesium sulphate purge should be given. Treatment should not be repeated unless Ascaris eggs are found in the stool two weeks later.

Hall[17] and others believe that santonin increases its efficacy against Ascaris when given in small doses over a number of days. The usual adult dose is from 1 to 2 grains (0.06 to 0.12 Gm.) and for children from one-fourth to one-half grain (0.015 to 0.03 Gm.), depending on the age and size. This dose should be given several hours after breakfast for seven consecutive days. An equal amount of mild mercurous chloride should be added and no other purgative given. If eggs are still present in the stool two weeks after the completion of this treatment, the series of treatments may be repeated.

(*c*) *Signs and Symptoms of Toxicity.*—Symptoms of poisoning vary from slight anomalies of perception, vomiting, abdominal pain, diarrhea and hematuria to convulsions, coma and death. The marked toxicity is usually due to large doses or long continued dosing. Some workers believe that a dose of 3 grains (0.2 Gm.) should not be exceeded, while others have used doses in large series with 5 grains (0.3 Gm.) without any untoward results.

(*d*) *Contraindications.*—It is not advisable to give santonin on an empty stomach or in an oily cathartic, as these conditions favor absorption.

(*e*) *Efficiency.*—The single dose method of treatment has been found highly effective, an average of 90 per cent of the ascarids being removed and from 60 to 80 per cent of the cases being cured by a single dose.[18] Pinworms also are removed by santonin.

WHIPWORM (TRICHURIS TRICHIURA)

The life cycle of Trichuris is relatively simple. The eggs pass out with the stools and develop in moist soil to the infective embryo stage in several weeks. On being swallowed by man, the larvae escape from their shells and are carried down the intestine to their habitat in the cecum. They attain adult size, from 1½ to 2 inches, in about one month. It is probable that they suck blood. Trichuris sews its long, slender, anterior end into the intestinal mucosa, and this habit combined with its position far down in the intestinal tract makes expulsion by drugs difficult.

TREATMENT OF TRICHURIASIS

Several of the common anthelmintics will remove a small percentage of whipworms. Thus tetrachloroethylene[6b] and oil of chenopodium[19] each will remove about 20 per cent of these worms, and hexylresorcinol, when given as recommended for Ascaris, will remove from 30 to 50 per cent.[20] It appears at present that repeated treatments with hexylresorcinol offer the best chance of removing this parasite.

Leche de higueron, the latex of Ficus laurifolia, is used extensively in South America against whipworm.

15. *(a)* Schapiro and Stoll.[6] *(b)* Caldwell, F. C., and Caldwell, E. L.: A Study of the Anthelmintic Efficiency of Higuerolatex in the Treatment of Trichuriasis, with Comment as to Its Effectiveness Against Ascaris Infestation, Am. J. Trop. Med. **9**: 471 (Nov.) 1929. *(c)* Maplestone, P. A., and Mukerji, A. K.: The Treatment of Ascariasis, Indian M. Gaz. **66**: 627 (Nov.) 1931.

16. Chopra, R. N., and Chandler, A. C.: Indian Santonin, Indian M. Gaz. **59**: 537 (Nov.) 1924. Caius, J. F., and Mhaskar, K. S.: Relative Efficiency of Various Drugs in Expelling Roundworms, Indian J. M. Research **11**: 377, 1924.

17. Hall, M. C.: Treatment for Infestations of Man with Parasitic Worms, U. S. Nav. M. Bull. **28**: 553 (July) 1930.

18. Maplestone and Mukerji.[15] Chopra and Chandler.[16] Caius and Mhaskar.[16]

19. Schapiro and Stoll.[6] Caldwell and Caldwell.[15]

20. Lamson, Brown, Robbins and Ward.[11] Molloy.[11] Brown[12]

Although this substance will remove 85 per cent of Trichuris with a single treatment,[15b] it has the disadvantage that it ferments and becomes extremely unpalatable at ordinary temperatures. As doses of from 30 to 60 cc. are given, it is not practical to conceal its taste by giving it in capsules. Because of the difficulty in shipping and storing, as well as because of its unpleasant taste, it has been used in this country only in a few experimental cases. Robbins[21] recently isolated the active principle of leche de higueron. It proved to be a proteolytic enzyme, which he has prepared in dried form and which retains its potency for a long time. This material has not been tried in patients, as Robbins found that it would attack and digest the stomach and intestinal mucosae when small lesions were already present.

PINWORM (ENTEROBIUS VERMICULARIS)

The life cycle of Enterobius is of the simplest type. Its eggs contain a larva when passed and require an incubation period of only twenty-four to thirty-six hours. On reaching the small intestine the ingested eggs hatch and the larvae are set free. The development of the larva takes place without migration through the body of the host. The worms grow to maturity in the small intestine, mate and then proceed to the large intestine. The adult female usually does not pass eggs but stores them in her uterus. The female, when filled with eggs, migrates out about the anus, causing an unbearable pruritus. These worms are broken open by the scratching of their host or by desiccation, and the enclosed eggs set free to be carried on the hands to the mouth.

TREATMENT OF PINWORM (ENTEROBIUS VERMICULARIS) WITH HEXYLRESORCINOL

Hexylresorcinol has been found[22] to be very successful in the treatment of pinworm. As this worm inhabits both the small and the large intestine, oral treatments and enemas are both necessary. Pinworms migrate to the anal region, usually at night, and the worms and eggs may be deposited on night clothes and bedding. For this reason any objects, such as night clothes, underclothes and bed sheets likely to be contaminated, should be boiled several times a week to kill the eggs. Small children should be warned about scratching the anal region, and their hands should be washed carefully after each toilet. In this infestation, personal hygiene is very important because of the fact that the worm eggs may be infective when passed and usually require only a twenty-four to thirty-six hour incubation period to become infective.

(*a*) *Preparation of the Patient.*—A light evening meal is ordered the night before treatment.

(*b*) *Administration of Hexylresorcinol.* — Since Enterobius lives in both the large and the small intestine, drugs used against it must be given both by mouth and by enema. When given by mouth alone the drug is often absorbed or diluted to such an extent as not to be present in effective concentrations in the large intestine. Treatments should be given every third day. The morning of the treatment no breakfast should be eaten and the drug should be taken at this time. The dose of hexylresorcinol is 0.1 Gm. for each year of age. Thus the adult dose of 1 Gm. is given to every one 10 years or older. Care should be taken that the pills are swallowed and not chewed, for chewing the pills results in a superficial burn of the mouth and, though it is of no great consequence, it is very unpleasant.

Following administration of the pills the patient should be given a large, warm soapsuds enema to clean out the large intestine. Following this, an enema composed of 1 Gm. of hexylresorcinol to 1,000 cc. of water should be given and retained from five to fifteen minutes. This strength of hexylresorcinol is rapidly fatal to pinworms. Following the expulsion of this enema the anal region should be well dried, for to some the hexylresorcinol may cause slight irritation. The results of both enemas should be placed in a 40 mesh screen and washed with warm water and a search made for the pinworms, which are slender, pointed worms about one-half inch in length.

Following the oral administration of the drug the patient may go about his regular occupation. No food should be eaten for five hours following treatment, as it impairs the efficiency of the drug. Water or black coffee may be taken freely, and after five hours the regular diet may be resumed.

(*c*) *Signs and Symptoms of Toxicity.*—These are described under hexylresorcinol treatment of ascariasis.

(*d*) *Contraindications.*—These are the same as the contraindications in hexylresorcinol treatment of ascariasis.

(*e*) *Efficiency.*—Patients who adhere to the advised hygienic precautions have been cured with one treatment. Children usually take longer, from three to five treatments being necessary. We have, by repeated treatments, cured every case of pinworm brought to the Vanderbilt Clinic. In case the enemas of two successive treatments contain no worms, treatments may be discontinued, to be repeated if worms are discovered later. Santonin, oil of chenopodium, and tetrachloroethylene, given orally, also remove numbers of pinworms.

TAPEWORMS

Beef Tapeworm (Taenia saginata); Pork Tapeworm (Taenia solium); Fish Tapeworm (Diphyllobothrium latum); Dwarf Tapeworm (Hymenolepis nana): The tapeworms found in man with the exception of Hymenolepis nana, require one or more intermediate hosts for the completion of their life cycles. The adult tenias live in the small intestine of man, their small heads buried in the intestinal mucosa. They have no mouth or digestive tract but absorb food through their body walls. They may grow as long as 15 feet. Each day or two the last segments of the worm are pinched off and may pass out alive and squirm about in the stool. These segments may be digested in the intestine, freeing into the stool their eggs, and these can be detected microscopically. Thus either eggs or segments or both may be found in the stool. These eggs, when eaten by a suitable host (the pig for T. solium or the cow for T. saginata), hatch in its intestine and migrate by way of the blood stream into the muscles and develop into tapeworm cysts. The cyst-containing flesh of these animals, when eaten insufficiently cooked by man, liberates the cyst, and the tapeworm head enclosed in each cyst attaches to man's intestine and grows into an adult tapeworm in from five weeks to three months.

The fish tapeworm, D. latum, passes eggs quite regularly. To complete the cycle these eggs must fall in water and be eaten by small water crustaceans, in which

21. Robbins, B. H.: A Proteolytic Enzyme in Ficin, the Anthelmintic Principle of Leche de Higueron, J. Biol. Chem. **87:** 251 (June) 1930.
22. Brown, H. W.: Treatment of Pinworm (Enterobius Verimcularis) Infestation with Hexylresorcinol, Proc. Soc. Exper. Biol. & Med. **30:** 221 (Nov.) 1932.

the eggs develop into a larval stage. The crustaceans are eaten in turn by certain fish, and the larval tapeworms then migrate into their muscles and complete their larval development. Man develops an infestation when such fish are eaten raw or insufficiently cooked.

Hymenolepis nana (the dwarf tapeworm) is only several inches in length, but this is balanced by the fact that a person may harbor hundreds of them. Man acquires this tapeworm by ingesting the eggs, as no intermediate host is necessary for the completion of its cycle.

Aspidium has been handed down over a period of several hundred years as the standard drug used against tapeworms. McGath and Brown,[23] after the study of a series of cases, have reported a successful technic using aspidium against tapeworm. Recently, however, Daubney and Carman [24] and Maplestone [25] have shown that carbon tetrachloride is also very effective against tapeworm (Taenia). No other drugs have as yet been proved to be more valuable than these two in the treatment of these infestations, although hexylresorcinol will remove tapeworms in some cases.

TREATMENT OF TAPEWORM CASES WITH CARBON TETRACHLORIDE

Carbon tetrachloride was introduced in 1921 by Hall [26] for the treatment of hookworm and, although millions have been treated with it,[3] it is now being replaced, as already pointed out, by the much less toxic tetrachloro-ethylene. It would seem worth while to determine whether tetrachloro-ethylene could replace it in the treatment of tapeworm infestations.

Carbon tetrachloride, as previously pointed out, is a toxic substance which causes marked central necrosis of the liver even in therapeutic doses. Under certain conditions this action of carbon tetrachloride causes a marked increase of guanidine in the blood, which condition is normally neutralized by the calcium present.[27] If, however, the patient is in poor physical condition with a low calcium balance, the guanidine formed is not neutralized and the patient becomes severely intoxicated from carbon tetrachloride.

(*a*) *Preparation of the Patient.*—Since one is unable by chemical analysis to determine whether the patient's calcium is low (as the blood calcium is not always an indication of this), to avoid intoxication from carbon tetrachloride the patient should be put on a high calcium diet from ten days to two weeks before treatment, and no meat should be given for a day or so before or after the administration of carbon tetrachloride. A light evening meal should be taken, but a preliminary purge has been found unnecessary.

(*b*) *Administration of Carbon Tetrachloride.*—In the morning, breakfast should be omitted and carbon tetrachloride given early. Thirty grams of magnesium sulphate should be dissolved in half a glass of water and the adult dose of 3 cc. of carbon tetrachloride should be shaken up in this solution and swallowed. No breakfast should be allowed until the purge has acted. Following the action of the purge a warm soapsuds enema may be given and the stool examined for the head of the worm. Children may be given 0.2 cc. of the drug for each year of age.

(*c*) *Signs and Symptoms of Toxicity.*—In well nourished individuals there may be no symptoms or merely mild and transient feelings of warmth, with possibly some slight dizziness. In others a period of from twelve to twenty-four hours may elapse before any signs of intoxication occur; then the patient usually begins to vomit and vomiting continues uninterruptedly. Jaundice may appear and the patient may vomit and pass blood. Finally collapse may occur, death following in some cases. If marked intoxication occurs, calcium gluconate may be given orally or, in case it is impossible for the patient to retain substances given, intramuscular calcium gluconate may be given. In very severe cases intravenous calcium medication may be given but on account of the great danger of such administrations, in which overdoses may be instantly fatal, it is suggested that the subcutaneous method be given preference over intravenous administration.

(*d*) *Contraindications.*[28] — The contraindication of utmost importance to the use of carbon tetrachloride is alcohol. So many cases of severe intoxication or death have followed the taking of alcohol at the time of the administration of carbon tetrachloride that there is no doubt whatever regarding the danger of this. As carbon tetrachloride injures the liver, one should avoid the giving of this substance in cases presenting liver disease. Patients with definite calcium lack should not be given carbon tetrachloride, but there has as yet been no definite method of ascertaining whether or not one is dealing with such a case. Therefore, the precautionary measures outlined should be followed before treatment is administered. If the routine treatment described is adhered to, the patient will not take fat immediately before or after treatment. It has been found in laboratory experiments and in the clinic that, when large amounts of fatty substances are taken immediately before or after treatment with carbon tetrachloride, absorption of this substance occurs probably through a different route than normally, carbon tetrachloride being carried around the liver through the lymphatics and reaching the brain in high concentrations, causing marked nervous symptoms not ordinarily seen.

Toxic symptoms seem to occur more frequently in persons treated with carbon tetrachloride when heavy Ascaris infestations are present and may be avoided by first treating the patient for Ascaris.

(*e*) *Efficiency.*—Several workers [29] who have treated many persons harboring Taenia saginata report from 70 to 97 per cent success from this relatively simple treatment. Taenia solium is also removed by carbon tetrachloride. If the head of the tapeworm is recovered, it is fairly certain that the patient is cured, although multiple infestations of Taenia are not unknown. Even if large portions of the worm are recovered and the head is not, the stool must be found free from eggs or segments for several months before

23. Magath, T. B., and Brown, P. W.: Standardized Method of Treating Tapeworm Infestations in Man to Recover the Head, J. A. M. A. **88:** 1548 (May 14) 1927.

24. Carman, J. A.: Observations on the Incidence of Helminthic Infestations in Natives of Kenya, with Special Reference to Taeniasis, Its Effect on Nutrition and Its Treatment with Carbon Tetrachloride, J. Trop. Med. & Hyg. **32:** 321 (Nov. 15) 1929. Daubney, R., and Carman, J. A.: Helminthic Infestations of Natives in the Kenya Highlands, Parasitology **20:** 185 (July) 1928

25. Maplestone, P. A., and Mukerji, A. K.: Carbon Tetrachloride in the Treatment of Taenia Infections, Indian M. Gaz. **66:** 667, 1931.

26. Hall, M. C.: The Use of Carbon Tetrachloride for the Removal of Hookworms, J. A. M. A. **77:** 1641 (Nov. 19) 1921.

27. Minot, A. S., and Cutler, J. T.: Guanidine Retention and Calcium Reserve as Antagonistic Factors in Carbon Tetrachloride and Chloroform Poisoning, J. Clin. Investigation **6:** 369 (Dec.) 1928. Minot, A. S.: The Mechanism of the Hypoglycemia Produced by Guanidine and Carbon Tetrachloride Poisoning and Its Relief by Calcium Medication, J. Pharmacol. & Exper. Therap. **43:** 295 (Oct.) 1931.

28. Minot and Cutler.[27] Lamson, P. D.; Gardner, G. H.; Gustafson, R. K.; Maire, E. D.; McLean, A. J., and Wells, H. S.: The Pharmacology and Toxicology of Carbon Tetrachloride, J. Pharmacol. & Exper. Therap. **22:** 215 (Nov.) 1923. Lamson, P. D.; Minot, A. S., and Robbins, B. H.: The Prevention and Treatment of Carbon Tetrachloride Intoxication, J. A. M. A. **90:** 345 (Feb. 4) 1928.

29. Daubney and Carman.[24] Maplestone and Mukerji.[25]

one can be sure that the treatment has been successful. Obviously, the head may have been digested or lost and the failure to recover the head does not necessarily mean that the patient has not been cured. Daubney and Carman, using this carbon tetrachloride treatment, found heads in only two of the thirty patients treated, yet seven weeks later only one of the patients began to pass segments again. The efficiency of this treatment for Diphyllobothrium and Hymenolepis has not been worked out.

TREATMENT OF TAPEWORM CASES WITH ASPIDIUM (MALE FERN)

Aspidium (male fern) has been the classic drug against tapeworm for years. Recently, McGath and Brown [23] instituted a technic at the Mayo Clinic with which they have been very successful in removing not only the common beef and pork tapeworms (Taenia saginata and solium) but also the fish tapeworm (Diphyllobothrium latum). Other workers report aspidium to be effective against Hymenolepis nana. Aspidium is not as nontoxic as it was formerly believed, and when given in large doses it is decidedly toxic and may be fatal.

(*a*) *Preparation of the Patient.*—No luncheon or supper is permitted the day preceding the treatment. Black coffee, tea and water may be taken freely. At 6 p. m., from 15 to 30 Gm. of magnesium sulphate should be given. The next morning at 6 a. m. an additional 15 to 30 Gm. of magnesium sulphate should be given.

(*b*) *Administration of Aspidium.*—The patient should be put to bed and allowed no breakfast. As soon as the purge given at 6 a. m. has resulted in a bowel movement (the stool should be examined for tapeworm) 30 cc. of the following emulsion is administered: oleoresin of aspidium, 6 cc. or Gm.; powdered acacia, 8 Gm.; water sufficient to make 60 cc.

One hour later the second 30 cc. of the emulsion of aspidium should be given. (The amount given must be reduced when children are treated; a total dose of 4 cc. of the emulsion for each 10 pounds (4.5 Kg.) of body weight may be given. This dose corresponds to the 60 cc. total amount for an adult of 150 pounds, or 68 Kg.) Two hours after this, 30 Gm. of magnesium sulphate should be given in several glasses of water, to be followed in two hours by a large soapsuds enema. The stool resulting from the purge and enema should be passed into a container and examined for the worms.

(*c*) *Examination of Stool for Tapeworm.*—The enema and all stools passed on the day of treatment should be poured into a 20 mesh sieve and warm water played on it and the fecal material washed away. The contents of the sieve can then be emptied into a flat pan (about 1 by 2 feet), the bottom of which has been painted black, and a careful search made for the tapeworm head. Brown and McGath, who recommend the aspidium treatment, report finding the head in the majority of cases.

(*d*) *Signs and Symptoms of Toxicity.*—When moderate doses are used, mild poisoning may occur, as evidenced by a slight jaundice and complaint of vertigo and headache. In moderately severe cases, nausea, vomiting, abdominal pain and even bloody diarrhea are complained of. Yellow vision and sometimes temporary blindness may occur. In severe poisoning the patient becomes drowsy and often delirious. There may be severe muscle cramps and convulsions, and respiration becomes shallow and the pulse weak. Because of the possibility of toxicity, the 6 Gm., as recommended, must not be exceeded.

(*e*) *Contraindications*—Aspidium should never be given to persons in poor physical condition. Because of its irritant properties, it should be avoided in cases of gastro-intestinal disease. It should be given with caution to pregnant women and in cases in which the kidneys are diseased. Oil purges should never be given, as they increase its absorption.

(*f*) *Efficiency.*—McGath and Brown state that, by carefully following their technic, all their patients have been cured.

TREATMENT OF STRONGYLOIDES STERCORALIS CASES

The life cycle of Strongyloides is similar to that of hookworm in that the larvae of both infect through the skin and migrate through the lungs before settling down in the intestine. The adult female Strongyloides is only one-eighth inch in length and buries itself in the mucosa of the intestinal wall. This protected position makes its expulsion by drugs very difficult.

Of numerous substances that have been tried, gentian violet has proved the most effective against this parasite. DeLangen [30] and Faust [31] have reported successful treatments of Strongyloides with this substance. Faust, who has treated 200 persons with this substance, recommends the oral administration of a one-half grain (0.03 Gm.) enteric coated tablet three times a day to children of up to 10 years of age and a 1 grain (0.06 Gm.) tablet three times a day for adults. The gentian violet is taken before meals for a period of from one week to ten days. A rest period of one or two weeks should be allowed between courses, during which time daily stool examinations should be made to ascertain the effectiveness of the treatment. Faust reports cures with one course of treatment in all but four cases, in which two courses were taken before a cure was obtained. Likewise, DeLangen noted marked relief in extremely severe cases of Strongyloides infestations in which from one-sixth to one-half grain (0.01 to 0.03 Gm.) of gentian violet was given from three to five times a day. The dye stains the mucosa of the intestine a brilliant violet, and the adult parasitic worms living in the mucosa absorb the dye, which is very toxic to them.

Gentian violet has not been used extensively as an anthelmintic and relatively little information on its toxicity has been obtained. Faust [32] has shown that man and dogs tolerate daily oral doses of from 30 to 35 mg. per kilogram of body weight. Young and Hill,[33] when treating septicemia and local infections, have given 500 mg. of gentian violet intravenously to man. In view of the limited experience with gentian violet, patients to whom it is given should be observed carefully for any signs of toxicity, such as loss of appetite, nausea, vomiting or weight loss, and the drug temporarily discontinued if they occur.

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33. Young, H. H., and Hill, Justina H.: The Treatment of Septicemia and Local Infections, J. A. M. A. **82**: 669 (March) 1924.

Oil of chenopodium has also been recommended against Strongyloides.

TREATMENT OF TRICHINELLA SPIRALIS CASES

The treatment of trichiniasis is made difficult by the fact that diagnosis in man is not usually made until several weeks after infestation, at a time when the invasion of the muscles by the young larvae has already begun. The treatment, therefore, must be directed against the young larvae circulating in the blood stream, those which have already entered the muscles, and the adult females buried in the intestinal mucosa. Miller, McCoy and Bradford [34] have shown that therapy directed against the larval stages is ineffective. They used neoarsphenamine, antimony and potassium tartrate, acriflavine, an acriflavine dye, gentian violet and metaphen intravenously without success. Likewise, treatment directed against the adult female buried in the intestinal mucosa is very unsatisfactory. If, however, a diagnosis is made while gastro-intestinal symptoms are still prominent, which indicates that the female worms are burrowing into the intestinal mucosa, the patient should be thoroughly purged with either castor oil or magnesium sulphate. This procedure will aid in the expulsion of the worms that are still free in the intestinal lumen and consequently reduce the number of larvae produced. One might even give a treatment of tetrachloro-ethylene or hexylresorcinol in the hope of killing the trichinellae only partially embedded in the mucosa.

NONALCOHOLIC CIRRHOSIS OF THE LIVER IN THE LEBANON AND SYRIA

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Hepatic disorders are common in Syria and the Lebanon. In addition to the enlarged livers due to congestive heart failure and disease of the biliary tract, hydatid cysts and amebic abscesses of the liver are frequently seen. More frequently encountered is a third group of patients with hepatic enlargement associated with splenomegaly. The clinical features of this group are epigastric distention, irregular bowel action and drowsiness after meals. Many of the patients have had repeated febrile attacks associated with jaundice, often accompanied by transient hepatic enlargement, epigastric tenderness, nausea and vomiting, lasting from a few days to a few weeks. Many live a reasonably long life without marked evidence of liver insufficiency. Rowntree [1] says that their cirrhosis is probably compensated. A number sooner or later develop evidences of advanced portal cirrhosis with ascites.

Cirrhosis of the liver is seen more commonly at the American University of Beirut among clinic patients than among private patients. It is more frequent among the farmers than among city dwellers, and it is most frequently seen in the farmers from villages in the neighborhood of Sidon and Tyre.

CONDITIONS IN WHICH CIRRHOSIS IS MOST COMMON

The diet of the people consists largely of cereals, olives, citrus fruits, grapes and figs. Milk is never abundant and is never properly handled. Most of it is sold or else used only for the sick. The diet of the peasants is fairly adequate but is often poor in protein and vitamin A.

The principal article of food is bread made of whole wheat or a mixture of wheat, barley and corn flour. The farmers use also lentils, peas and beans. Olives and olive oil supply most of the fat. Butter is used after being boiled and stored for some time. Mutton is the principal meat. Chicken, beef and fish are eaten occasionally, but no pork is used. Green vegetables are consumed only during certain seasons, while oranges during the winter and grapes during the summer are rather abundant.

The average farmer smokes tobacco whenever he can afford it, but he rarely touches alcohol. The majority of the farmers belong to a sect of Islam that is strict on this point. The women never touch alcohol. These people do not use curry; their only condiments are red and green peppers, which are not used excessively.

Bacterial and protozoal infections and helminthic infestations are very common. Malaria, mostly of the tertian and estivo-autumnal types, and dysenteries are the prominent diseases and occur much more frequently among the farmers than among the urban population. Syphilis is not common; goiter is rare. Typhoid is endemic. Follicular tonsillitis and rheumatic fever occur fairly frequently. Diphtheria is seen occasionally but there is no scarlet fever. Dermal leishmaniasis is frequent in certain sections, but only a few cases of infantile kala-azar have been detected. Helminthic infestations are very common; often two or more intestinal parasites are found in the same host. Trichocephalus dispar is almost always present; then, in order of frequency, occur Taenia saginata, Ascaris lumbricoides and Oxyuris vermicularis. Ancylostomiasis and filariasis are rare and there is no schistosomiasis.

The incidence of amebic dysentery is about equal to that of all types of bacillary dysentery, and double infections are not uncommon. Intestinal flagellates, such as Giardia intestinalis and Trichomonas intestinalis, are common. We have not been able to find Balantidium coli. The cause of the diarrhea cannot be found in about one third of the cases.

CLINICAL CIRRHOSIS IN SYRIA AND THE LEBANON

During the six years from 1926 to 1931 inclusive I have studied in the medical wards seventy cases of portal cirrhosis with ascites.[2] Sixty-three per cent of the patients were less than 40 years, and 20 per cent were less than 20 years of age. Seventy per cent of the patients were male and 30 per cent were female. Only 8.8 per cent admitted the use, to a certain extent, of alcoholic drinks. Twelve per cent gave a history suggestive of syphilis or had positive Wassermann or Kahn reactions.

I have reviewed, for the purpose of comparison, the autopsy records of the cases of cirrhosis of the liver for the years 1925-1932 inclusive, at the Presbyterian Medical Center in New York.[3] There were forty cases.

34. Miller, J. J. Jr.; McCoy, O. R., and Bradford, W. L.: Intravenous Treatment in Experimental Trichiniasis, J. A. M. A. **98:** 1242 (April 9) 1932.

Read before the New York Society of Tropical Medicine, March 9, 1934.

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2. I am indebted to Dr. E. L. Turner, professor of medicine, Dr. G. B. Khayat, associate professor of medicine, and Dr. S. E. Harris, formerly associate professor of medicine, American University of Beirut, for permission to include their cases in this group.

3. I am indebted for this privilege to Dr. W. W. Palmer, professor of medicine, and Dr. J. W. Jobling, professor of pathology, Presbyterian Hospital, New York.

Only 13 per cent were younger than 40 years, and only 5 per cent were younger than 20 years. Eighty per cent were male. Fifteen per cent had syphilis, and 35 per cent had rheumatic or arteriosclerotic heart diseases. In 45 per cent, alcoholic drinks had been used over long periods. Apparently, cirrhosis of the liver occurs earlier in life and affects the female sex somewhat more frequently in Syria.

In Syria most of the patients with cirrhosis of the liver, except those with a chronic circulatory deficiency, show splenomegaly long before ascites appears. A history of malaria or dysentery or of both is especially common among the patients from the region of Sidon and Tyre. In 30 per cent, malarial parasites are found in the blood or in material obtained by splenic puncture, or a history of chronic malaria is obtained. Often by the time the cirrhosis is well established, the malaria has disappeared.

The duration of life varies from six months to five years after the first abdominal paracentesis. I know of patients who have been tapped twenty, forty and even seventy times. Frequently, palpation shows that the liver is hard and irregular and it remains enlarged to the end. Analysis of the gastric juice frequently shows low acidity; the icterus index is but slightly elevated; the levulose tolerance is lowered in some cases and the blood calcium is somewhat low, varying from 8 to 10 mg. per hundred cubic centimeters.

Often marked jaundice and anuria develop a few days before death, but the blood urea does not rise markedly. The patients become extremely emaciated before death. A large hard spleen and a distorted, coarsely hobnailed liver, usually enlarged but occasionally atrophic, are found at autopsy. Unfortunately, permission for an autopsy cannot always be obtained.

COMMENT

Notwithstanding the many obscure points regarding the etiology and pathogenesis of portal cirrhosis, it appears certain that there must be repeated injury to and degeneration and necrosis of liver cells, not extensive enough to produce the immediate death of the subject. The injury is followed by inflammation, regeneration and fibrosis, the end results being determined by the interplay of these processes. Furthermore, although single injuries may suffice to produce cirrhosis in experimental animals, a combination of toxic and infectious agents acting simultaneously or in sequence is more potent and is perhaps the usual sequence of events occurring in the production of human cirrhosis.

A prolonged study of the cases has convinced me that chronic malaria and dysentery, and especially the combination of the two, are the important factors in the causation of the type of cirrhosis seen in Syria. An enlargement of the liver accompanied by jaundice, epigastric tenderness and vomiting occurs frequently during the course of malaria. In fact, most patients with the large spleen of chronic malaria have also a large liver. Knowledge of the pathologic anatomy of human malaria is based on autopsies of patients dying from pernicious attacks of estivo-autumnal malaria. Deposition of pigment in the Kupffer cells, thrombosis of hepatic capillaries, degenerative changes in the liver cells and occasional areas of necrosis are the changes most commonly found. Most pathologists emphasize the fact that fibrosis is absent in these livers.

The change that occurs in the damaged livers of the many patients who recover is a matter for speculation. It is known that the malarial pigment remains in the Kupffer cells for a certain length of time after the patient recovers from the attack. Unless the patient is properly treated, and protected against further infection, the malaria becomes chronic, and with each recrudescence there must occur a new insult to the liver and new areas of degeneration. Perhaps the end result of these oft repeated injuries to the liver will be determined some day from studies of experimentally produced malaria.

Diffuse hepatitis without demonstrable abscess formation is not an infrequent manifestation of amebiasis. Patients with slight jaundice associated with an enlarged and tender liver, nausea and vomiting, slight fever and leukocytosis are assumed too frequently to have catarrhal jaundice. I have seen such cases in which, in spite of the absence of a history of dysentery, examination of the stools revealed cysts of Endamoeba histolytica and suitable treatment brought prompt relief. I believe that these attacks of hepatitis entail repeated periods of degeneration and necrosis in the liver, alternating with periods of regeneration and repair. The end result of such processes, continuing unchecked, can only be imagined. The possibility that cirrhotic changes will appear in a liver is probably enhanced in the cases in which malarial infection and amebic infection occur alternately or together. Ewing [4] has reported advanced degenerative changes in the liver cells in a case of double infection with malarial plasmodia and Endamoeba histolytica.

Ascariasis lumbricoides is much more prevalent among the inhabitants of the city of Aleppo, in whom cirrhosis is not seen so frequently as it is among the farmers.[5] Professor Bonne of Java tells me that in that country cirrhosis of the liver is not more frequent among the people who harbor Taenia saginata.

The poor farm laborer of the district of Sidon and Tyre receives treatment of his malaria and dysentery which is inadequate in comparison with that received by the town dwellers. This may be another reason why cirrhosis is more common in these rural communities.

SUMMARY

Cirrhosis of the liver is of frequent occurrence in Syria and the Lebanon. It is more common in the rural population than in the dwellers in cities It is particularly frequent in the farm laborers in one district near Sidon and Tyre.

Alcohol is not used by these people and they do not use condiments excessively; syphilis is uncommon, but malaria, dysentery, and infestation with intestinal parasites are prevalent.

The cirrhosis is seen in comparatively young people, 63 per cent of the patients being younger than 40 years. The proportion of female patients with the condition is larger in Syria than in America. Enlargement of the spleen is marked and often precedes signs of liver insufficiency. The liver often remains enlarged and coarsely hobnailed.

Malaria and amebic dysentery (and especially the combination of the two) seem to be the primary causes of cirrhosis of the liver in Syria and the Lebanon.

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SPASTIC PARAPLEGIA

CASES ILLUSTRATING THE COMMON ETIOLOGIC FACTORS

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Spastic paraplegia is a descriptive term and not a diagnosis. Its causes are many. In the classic form it is characterized by a progressive spasticity in the lower limbs, with all the signs and symptoms of a pyramidal tract disease below the level of the lesion. The onset is described by the patient in terms of fatigability of the lower limbs. This fatigue of the muscles is the result of a beginning "muscular ankylosis of the joints," as Strümpell [1] designated it, in its later stages.

While the symptomatic recognition of a spastic paraplegia is relatively simple, the etiologic factor is usually difficult to discover. The older writers frequently limited the term spastic paraplegia to a rare group of cases first described by Erb [2] and Charcot,[3] which is now designated as primary lateral sclerosis. This condition occurs mainly in children and young adults and a progressive spastic paralysis beginning in the lower limbs is the only symptom of the disease. In the great majority of cases of this kind, however, the progress of the symptom complex discloses the fact that some other condition is basicly responsible for the spastic weakness in the lower limbs, and, further, the signs and symptoms are usually not limited to the pyramidal tracts.

Given a patient with a beginning spasticity in the lower limbs, with pyramidal tract signs, including mild bladder involvement, with or without sensory changes, careful study is necessary to determine the basic pathologic process. Many of the European writers [4] have placed multiple sclerosis as the most common condition showing spasticity in the lower limbs as its earliest manifestation. Most of the cases diagnosed as primary lateral sclerosis which have come to autopsy have shown the plaque formation which is characteristic of multiple sclerosis. In fact, a spastic paraplegia may be for years the only evidence of a multiple sclerosis, even with apparent level signs. The following case illustrates this condition:

A physician, aged 40, with bronchiectasis, began to show progressive spasticity in the lower limbs, without bladder symptoms. A careful study revealed a sensory level at the sixth thoracic segment with a complete block as shown by the Queckenstedt test and injection of iodized oil. Laminectomy revealed no cause for the symptoms. The patient, however, became completely paraplegic immediately after the operation and remained so for a period of six years. Treatment for the bronchiectasis was carried on during all this time. With improvement in the lung condition the neurologic picture became markedly improved, although recently the lung condition has been worse. The patient is now able to walk, but there is still mild spasticity, hyperreflexia, clonus and a positive Babinski sign. The sensory disturbances are now in the background.

This case had originally suggested spinal cord tumor and the operation was done because of this diagnosis. Nothing was found to explain the condition and nothing was done to account for the immediate complete paralysis or the improvement six years later. The serologic examinations have always been negative and no antisyphilitic treatment was given. At the present time multiple sclerosis is the most plausible diagnosis even in the absence of signs and symptoms above the sixth thoracic segment, because of an almost complete remission that has now lasted nearly two years. It is usual to have disturbance in deep sensibility in multiple sclerosis in addition to the spasticity. This our patient had, but it has completely disappeared.

Syphilis must always be considered as an etiologic factor in progressive spasticity of the lower limbs. As a rule it originates from the meninges and involves the spinal cord substance secondarily, with the formation of what is histologically a syphilitic meningomyelitis. Intramedullary syphilitic lesions of the spinal cord occur in the nature of a vascular disease [5] and gummas are rarely seen. This syndrome is well illustrated by the following case:

A physician, aged 53, complained chiefly of increasing weakness and spasticity of both lower limbs. There were no symptoms or signs referable to the upper half of the body. Examination showed a sensory level at the eighth thoracic segment with a spastic paraplegia. A gross cord lesion was suspected. The Queckenstedt test confirmed our suspicion, an almost complete block being found. Despite positive serologic results in both blood and spinal fluid, the patient demanded an exploration. A focal meningomyelitis was discovered at the diagnosed level. Surgery could do nothing for him because of the firm adherence of all the membranes to the spinal cord with invasion of the cord substance. Therapeutic measures have produced only a mild improvement. This is usually the case when destruction of the fiber tracts has already occurred.

Cases of this sort are not rare, but the classic picture produced by a focal syphilitic process is the so-called Brown-Séquard symptom complex. This is characterized in brief by motor paralysis on the side of the cord lesion, with sensory disturbances of pain and temperature on the contralateral side below the level of the lesion. This syndrome can also be caused by any unilateral lesion involving the spinal cord.

Pernicious anemia is notorious for its effect on the spinal cord. The condition, when typical, is so characteristic that it can frequently be diagnosed before the blood changes occur. A combined degeneration is the rule. Clinically this is shown by motor weakness, with spasticity, at times, and with posterior column disturbance mainly involving vibration and muscle position. This condition is illustrated by the following case:

A woman, aged 59, showed spasticity in the lower limbs as the predominant symptom. Because of the presence of ataxia with loss of vibration in the affected limbs, pernicious anemia was suspected. Gastric analysis showed complete absence of free hydrochloric acid. The results of the examination of the blood confirmed the clinical diagnosis. Treatment with liver and hydrochloric acid produced only a very mild improvement because of the degree of involvement of the cord substance.

As a rule the onset of spinal cord changes is shown clinically by paresthesias in the fingers and toes, with clumsiness in finer movements and with weakness in the lower limbs with or without spasticity. A combination of paresthesias and pyramidal tract signs with posterior column symptoms is extremely suggestive of pernicious anemia.

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Read before the Section on Nervous and Mental Diseases at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

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Trauma can produce changes in the spinal cord, as it does in the brain, the result of concussion, hemorrhage or maceration from compression. The clinical picture usually begins shortly after the trauma, with flaccidity in the beginning, which rapidly changes to spasticity if the lesion is not a complete transverse myelomalacia. This is illustrated by a patient who was "jack-knifed" in an attempt to "jack up" an automobile. The paralysis in the lower limbs was complete and flaccid in the beginning. Gradually spasticity developed, with the permanent residuals showing an incomplete transverse lesion of the spinal cord.

Vascular lesions of the spinal cord occur with sufficient frequency to receive attention. They are seen in both young and old. They often come on abruptly and produce symptoms in direct relation to the size of the vessel involved and its location. A recent case will illustrate the symptomatology in young people:

A boy, aged 13 years, after recovery from a grippal infection carried a heavy weight for a short distance. A few hours later he experienced pain in the lower chest, anteriorly, which caused him to rest for a few hours. On awakening he found that he was paralyzed from the waist downward. A sensory level could be established, more marked for pain and temperature than for deep sensitivity. A gradual improvement is occurring but the patient will probably not make a complete recovery. The vessel involved in this patient was probably the anterior spinal artery.

In older people, arteriosclerosis and syphilis play the dominant rôles. We have discussed this subject in detail in previous publications.[6]

Intramedullary or extramedullary tumors of the spinal cord are capable of producing a spastic paralysis in the lower limbs if they are situated below the cervical enlargement. Frequently the first complaint is tiredness, the result of spasticity and weakness in the lower limbs, which may progress to a complete paraplegia. Symptoms of a level lesion are frequent with root irritation including the so-called girdle sensation and a sensory level. The extramedullary tumors are theoretically capable of producing root symptoms more frequently than the intramedullary ones. From the practical standpoint, however, it may be impossible to differentiate them clinically. A word of caution might be interpolated at this point in regard to the Queckenstedt test. We saw a marked increase in the spinal cord symptomatology, including the onset of a complete paralysis, develop in a patient as the result of the performance of this test. According to Elsberg,[7] the sudden onset of paraplegia following a Queckenstedt test is in favor of an extramedullary and frequently an extradural lesion. In one patient in whom this occurred, the autopsy disclosed an intramedullary tumor of the spinal cord.

Tuberculosis of the spine is a well recognized etiologic factor in the production of spastic paraplegia. The vertebrae may or may not show gross deformity. The roentgenogram will frequently show the bone disease. At times an extradural granuloma without Pott's disease is seen. Intramedullary tuberculoma is extremely rare. We have seen it in only three cases. The symptomatology does not differ from that of other intramedullary gross lesions.

In nontuberculous lesions of the spine, the spinal cord can be eventually compressed with the production of a spastic paralysis in the lower limbs.[8] Such conditions have been described by Viets and Clifford[9] in a kyphoscoliosis. In this group might be placed extradural abscesses and metastatic lesions of the dura.[10] In the abscess cases the history is usually characteristic. There is frequently a preceding boil or carbuncle on the back of the neck with the sudden onset of spinal cord symptoms, including root pains and paraplegia, either flaccid or spastic. Abscesses within the cord itself are rare, only a few cases having been reported.[11]

Unfortunately, metastatic lesions to the spinal cord membranes from the breast and the prostate are comparatively common. Transverse spinal cord symptoms are the rule. Frequently the site of preference is outside the dura. They have been known to produce sudden paraplegias. Spiller[12] was the first to call attention to this fact. We[6] have also reported similar cases.

No discussion of spastic paraplegia is complete without a mention of hysteria, which may so mimic an organic cord disturbance that it may be difficult at first to make a differentiation. The presence of organic signs should serve to make the correct diagnosis.

The infectious diseases play an important rôle in the production of spinal cord involvement, particularly in children. We have recently seen spastic weakness and incoordination in the lower limbs following measles. Most of these cases clear up completely. Other childhood diseases can produce similar pictures. As a rule the spinal cord involvement is not complete and in the later stages the patients show only weakness and incoordination. In the adult a spastic weakness can occur from infections and from serums and vaccines.[13]

Lesions of the paracentral lobules of the brain can give a spastic weakness confined to the lower limbs that simulates spinal cord diease. Such a case is portrayed by a patient, aged 52, who began to show weakness of both lower limbs, associated with rigidity and poor control of the sphincters. Sensory disturbances were not prominent. On admission, marked spasticity and hyperreflexia of the lower limbs were noted. The serology was negative. There were no signs of intracranial pressure. The patient lived only two months after the onset of the condition, death being due to cardiovascular disease. At autopsy the brain showed a large fibroblastic tumor springing from the falx cerebri and compressing and destroying both paracentral lobules.

A less common condition giving a symptom complex that can be described by the term "spastic paraplegia" is arachnoiditis, described particularly by Stookey.[14] Recently cases have appeared in the literature which give evidences of a gross focal lesion with spastic-ataxic paraplegia in which at operation only an adhesive process in the meninges is found. Stookey has found this syndrome in a series of well studied cases. Their differentiation from spinal cord tumor is difficult and at times impossible.

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COMMENT

We have enumerated a group of conditions in which spastic paralysis of the lower limbs is the predominant picture. We have, however, by no means exhausted the list. While the recognition of the symptomatology is easy, the determination of the etiologic factor is usually difficult. Certain conditions occur particularly in certain age groups, yet no age is exempt. Even in children metastatic cord lesions occur, such as sarcoma, hypernephroma and Hodgkin's granuloma. Arteriosclerosis is not common in the young, yet thrombosis of the anterior spinal artery is more common in the young than in the old.

Syphilis plays a dominant rôle in spinal cord disease. Even when gross lesions are suspected, one must keep this etiologic factor in mind. Unfortunately when many cases of syphilis of the spinal cord are recognized the condition has advanced so far that therapy can only prevent progression of the disease and cannot effect a cure.

We have seen severe cord symptoms of the spastic-ataxic type as an allergic reaction. We have seen a spastic paralysis after the use of antirabic vaccine and after the use of serums and vaccines of all sorts. While some of these cases tend to recover, many show severe residuals.

While the term spastic paraplegia refers most frequently to involvement of the pyramidal tracts, it is extremely uncommon to see pure cases of this sort. There is usually involvement of the sensory pathways with resulting ataxia and disturbance of sensation up to the level of the lesion. The sphincters are involved in direct relation to the motor and sensory disturbances. The diagnosis of a primary lateral sclerosis is usually incorrect. The cases which have come to autopsy with this diagnosis have been multiple sclerosis, tumors, vascular lesions or other pathologic conditions. We have seen, however, a case in a young patient whose brother and father also had the type that is recognized as the familial form of primary lateral sclerosis.

Because of the peculiarities in the circulation, sclerosis of the vessels in and around the cord is not as frequent or as early as is atheromatous change in the vessels of the brain. Yet the cord is not immune to sclerosis of its vessels. The peculiarity of the circulation is due to the fact that all the vessels destined for the spinal cord come off at right angles to the parent branches. The rarity of metastatic lesions of all sorts to the spinal cord itself is testimony to the fact that the vessels are not in the direct line of blood flow. Metastasis to the membranes of the cord, however, is common.[6]

As indicated before, the list given is by no means complete. Rare conditions can occur, such as diabetes mellitus, early amyotrophic lateral sclerosis, leukemic infiltrations,[15] myelomas,[16] Caisson's disease [4] (Oppenheim [4]) and paraplegia of the aged.[4] Sudden and severe generalized hemorrhages rarely if ever produce spinal cord involvement, in contrast to pernicious anemia. Spinal cord involvement has also occurred after severe systemic infection. It has been seen in hemangioma of the spinal cord.[17]

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Given a case of beginning spastic weakness in the lower limbs, what is the method of examination and what are the possibilities in order to determine the underlying basis? A complete history is essential. A thorough neurologic study must be done. Serologic and cytologic studies of blood and spinal fluid are important. The Queckenstedt test should be done as a routine procedure in every case of involvement of the spinal cord that even suggests a gross lesion. Roentgenographic studies of the spinal column may give diagnostic information. Search for primary malignant lesions should be carried out on the least suspicion that the spinal cord symptoms are the results of metastasis.

While it is impossible to list the various conditions that may produce spastic paraplegia, a good working list has already been given.

SUMMARY AND CONCLUSIONS

1. Spastic paraplegia is a descriptive term and not a diagnosis.

2. The term primary lateral sclerosis is now given to the group originally described by Erb and Charcot, in which only the pyramidal tracts are involved. These cases are extremely rare. Many occur in children and are familial.

3. Most of the cases beginning with spastic weakness in the lower limbs prove to be either multiple sclerosis, syphilis, pernicious anemia, neoplasm, trauma or other conditions.

4. Thorough study is needed in all cases presenting a beginning spastic paraplegia to make an etiologic diagnosis.

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ABSTRACT OF DISCUSSION

DR. I. S. WECHSLER, New York: I can subscribe to every word Drs. Winkelman and Eckel said and yet take exception to the whole paper. By this I mean that they have given a title that tries to cover everything and therefore, I fear, covers nothing. Spastic paraplegia is a designation that has come down from writers of fifty years ago, who did not have the knowledge of pathology or of clinical neurology that exists today. The term used to cover a multitude of conditions now recognized as specific syndromes. If by spastic paraplegia is meant only involvement of the pyramidal tracts, of course many of the conditions that the authors enumerated are either not described sufficiently or are described too extensively. It seems to me that they tried to cover the symptomatology of the spinal cord. As a nosologic entity the term "spastic paraplegia" no longer has any place in neurology. With injury of any sort to the spinal cord, not necessarily that of trauma but of infection, tumor, tuberculoma, vascular diseases or what not, the important question is What happened to the cord and where has the lesion taken place? An injury at a given level involves various pathways, depending on the extent of the lesion and on the rapidity of its development. It doesn't matter so much what happens to the cord; much more important is where and how severely it has been affected and what the etiologic or pathologic process is. If, for instance, there is a tumor, all the symptoms point to a level and below it. Similarly with a crush of the cord. If there are disseminated lesions, such as occur in infections, multiple sclerosis or syphilis, one is not dealing with a spastic paraplegia or with a cord condition alone. Therefore it seems to me that it is much better to know the lesion, know its location, estimate its extent, and then find out whether there are sensory changes, pyramidal tract signs, vasomotor disturbances, vesical and rectal disturbances, and so on. While I agree in the main with what Drs. Winkelman and Eckel have said, I think it would be much better to throw out the whole concept of spastic paraplegia and speak of the clinical syndromes in anatomic, physiologic, pathologic and etiologic terms.

DR. N. W. WINKELMAN, Philadelphia: Dr. Wechsler's point of view is exactly the point of view we have tried to give, that spastic paraplegia is a descriptive term. It is, however, a term that is used even by neurologists and is not an accurate histopathologic diagnosis by any means. That is the whole point of the paper, as we have stated. We have given a short outline for the general physician, which he may use whenever a patient with a spastic weakness in the lower limbs presents himself for diagnosis.

CHRONIC BRUCELLOSIS

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Brucellosis is the most recent, and it appears to be the most satisfactory, name applied to Brucella infections. "What's in a name?" As it will be pointed out later, names have been very important in shaping the history of this disease.

Hughes,[1] who in 1896 gave the name "undulant fever," understood the importance of the name. He published in the *Lancet* an entire article on the subject of an appropriate name for this disease. He covered almost half a column with the enumeration of the many names which down to that time had been applied to the disease in various languages. Since he wrote that article still more names have been applied. Mediterranean fever, Malta fever and undulant fever have been the most commonly used.

The only amusing incidents that I know to have been associated with the dreary disease have been connected with the name. According to a story related by Hughes, the British military reports used to designate the disease as "simple continued fever." The Tommy, who apparently liked the alphabet as well as do Washington officials, reduced the name to "S. C. fever." Then, forgetting what the S stood for, he evolved "slow continued fever," which had the advantage of expressing his feelings somewhat. Hughes conceded that "slow continued fever" was as good a name as any, with the exception of the new one of "undulant fever," which he then proposed—"undulant" referring to the wavelike appearance of the temperature curve. Later it will be pointed out that undulant fever is not an appropriate name for the disease as it is now known.

It is somewhat amusing to look back on the exasperation of the native Maltese over the use of the name of his island to designate this disease. To stigmatize his native land in that way was too much for him. The *Lancet* is responsible for this little pun: To the question "How would you make a Maltese cross?" the answer is "Associate the name of the island with a disabling fever."

Sympathetic with the Maltese, the International Congress of Medicine and Hygiene meeting in London in 1913 adopted a resolution to abolish the name Malta fever and substitute "undulant fever," as proposed by Hughes. But still the name stuck. Again in 1927 official action was taken. The Malta branch of the British Medical Association reprimanded American and continental writers for their persistence in the use of the odious name. It is now gradually passing into disuse, probably not so much as the result of official remonstrance as because of a realization that a local name is not appropriate for a disease of world-wide distribution.

The name brucellosis is preferable to all others because it simply expresses infection with Brucella, regardless of the nature of the disease response, and because it is applicable to the disease in man or in any of the lower animals.

There was also a significant confusion of names in regard to the causal organism. In 1886 Bruce, a medical officer in the British army stationed on the island of Malta, discovered the causal organism of the fever that disabled many of the soldiers of the garrison on that island. He called the organism Micrococcus melitensis.

About a decade later the Danish veterinarian Bang discovered the causal organism of contagious abortion of cattle, a disease that ranks with tuberculosis in causing tremendous financial losses to dairymen in every country of the world where cattle are raised. Bang named his organism Bacillus abortus.

These two generic names, Micrococcus and Bacillus, served for two decades to guide bacteriologic investigations of the human disease and the disease in cattle into separate channels. Then in 1917 I happened to be studying the bacterial flora of milk as it comes from the cow's udder and found that Bang's bacillus is very closely related to Bruce's micrococcus. Later the generic name Brucella, derived from Bruce, the name of the discoverer, was given to the entire group, including the organisms of Bruce and of Bang. The causal organisms of the human and bovine diseases were found to be so closely related that it was a mystery why a disease similar to the so-called Mediterranean fever was not known in this country.

The war, with its special problems, diverted interest from Brucella investigations until 1922, when the first case of human infection with the abortus variety of the organism was diagnosed in the Johns Hopkins Hospital. It was reported by Keefer in 1924.[2] Subsequently, as physicians have gradually learned that brucellosis is a disease that should be considered in every case of fever not attributable to other causes, the number of reported cases has greatly increased. Last year there were 1,787 cases reported in the United States, some from every state of the union. It is not known what percentage of the total number of cases the reported cases represent. It is certain that a great number of cases of Brucella infection are not recognized as such.

Brucellosis is a very deceptive disease. The symptoms are manifold, sometimes resembling one disease and sometimes another. Even in Mediterranean countries, where the disease is of a severe type and where it has been known for many decades to occur commonly, the diagnosis is often incorrect. In 1922, before human infection with the bovine type of the organism was known to occur, Bassett-Smith[3] made the statement that in its early stages nearly every case of brucellosis had been treated for some other disease before the correct diagnosis was made. Every treatise on brucellosis emphasizes the extreme difficulty of diagnosis, owing to lack of characteristic symptoms. Typhoid, malaria, rheumatic fever, endocarditis, tuber-

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1. Hughes, M. L.: Undulant (Malta) Fever, Lancet **2**: 238-239 (July 25) 1896.

2. Keefer, C. S.: Report of a Case of Malta Fever Originating in Baltimore, Md., Bull. Johns Hopkins Hosp. **35**: 6-14 (Jan.) 1924.

3. Bassett-Smith, P. W.: Undulant Fever, in Byam and Archibald: Practice of Medicine in the Tropics **2**: 1016, 1922.

culosis, bronchial pneumonia, bronchitis and influenza are some of the diagnoses erroneously given to acute cases of brucellosis.

During the last few years the physicians of this country have become alert to the prevalence of brucellosis, and it seems probable that now most of the acute cases that come into the hands of competent physicians receive the proper diagnosis. But there is convincing evidence that cases of the milder forms of the disease rarely receive a correct diagnosis.

The writers who described brucellosis in Mediterranean countries recognized mild types of the infection as well as the severe types. Shaw,[4] who was a member of the British Mediterranean Fever Commission of 1905-1907, was the first to recognize the so-called ambulant form of the disease, in which symptoms may be entirely absent or limited to a few days of slight fever. Shaw discovered the ambulant type of cases by examining the blood of 525 Maltese dockyard employees for specific agglutinins in the blood serum. Fifteen per cent gave a distinct reaction and twenty-two of those giving the highest agglutinin titer were examined carefully. Cultures were obtained from ten, all of whom were working full time. Examination revealed, however, that there was a slight rise of temperature in some of them.

Shaw's observations on the ambulant form of the disease have been confirmed by other investigators in other parts of the world. Hardy [5] and his collaborators reported that an average of 25 per cent of the cases they studied in Iowa were ambulant. The one constant symptom, and occasionally the only one, was weakness. Physical examination usually revealed no abnormality.

Of special interest are the recent reports of investigations on packing house employees in this county.[6] The porcine type of Brucella is more virulent for man than is the bovine type, and the handling of infected material leads to infection more readily than does the ingestion of contaminated food. Hence, packing house employees who handle hog products work under conditions peculiarly hazardous for contracting brucellosis, and a study of such groups has been a fruitful field for investigation. The results of the several investigations have agreed in showing that individuals who come into contact with infective material may develop immunity reactions without suffering any notable illness. Further, the results of the studies have revealed that even among packing house employees—a group whose illnesses should promptly suggest brucellosis—a large percentage of cases do not receive a correct diagnosis. Among the packing house employees examined by Martin and Myer, fifteen cases were found with histories of illness suggestive of brucellosis during the preceding eighteen months and with agglutinins specific for Brucella in the serums. Only three, or 20 per cent, of the fifteen cases had received a diagnosis of brucellosis.

If only 20 per cent of cases of brucellosis receive a correct diagnosis in a group in which occupational hazards should suggest infection with Brucella, it seems probable that sporadic cases with less obvious histories of contact with the organism may receive a correct diagnosis in an even smaller percentage of cases.

The name "undulant fever" is an obstacle to the recognition of some of the chronic cases, for it implies a fever temperature, whereas that does not always obtain. There is to be found in the literature little information about the disabling chronic form of the disease in which, during long periods of many months of illness, there may never be a significant rise in temperature.

In his classic monograph of 1897 on undulant fever, Hughes [7] describes what he calls an intermittent type of the fever in which the temperature may be normal or subnormal in the morning, 99 F. or higher in the afternoon, and normal again at night. He mentions that this condition, with mild symptoms of disease, may continue for months. Hardy and his associates in their paper of 1930 on the disease in Iowa state that in their ambulant cases the temperature was normal in the forenoon and rarely reached 101 in the evening. But neither Hughes nor Hardy emphasizes the fact that in a given case the slight afternoon rises in temperature may continue to be insignificant for months. In my own case, on more than one occasion there were many months of complete disability with never a rise of temperature above 99.5 F.

The recent investigations of Feldman and Olson [8] are a valuable contribution to the knowledge of chronic brucellosis. These authors availed themselves of slaughter house material for the study of the chronic disease in swine. They selected for study apparently healthy animals that gave positive agglutinin reactions. From one of these animals, in which postmortem examination revealed no lesions, the causal organism was obtained from the spleen. From another hog carcass Brucella was cultivated from an abscess of the spermatic cord and also from the lymph nodes of the head, although the lymph nodes did not reveal morbid changes. These investigators studied a number of cases of spondylitis in apparently normal slaughter house hogs. They demonstrated Brucella in some of them. It was usually the lumbar or sacral vertebrae that were affected. The result of this study of spondylitis in swine is of particular interest from the point of view of the human disease, because lumbar pain without objective signs of the disease is a common symptom in cases of human Brucella infection. Spondylitis in man, proved to be due to an abscess caused by Brucella infection, has been reported.[9]

Results similar to those of Feldman and Olson have been obtained by many other investigators of the disease in various domestic and experimental animals. There have been repeated demonstrations of infection in cattle and goats without clinical evidence of disease. In fact, the great difficulty in avoiding the use of milk contaminated with Brucella is that these organisms are excreted in the milk of apparently healthy animals.

Since the infection occurs commonly in animals that show no sign of disease, and since it is even known to occur when lesions are not to be found on postmortem

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5. Hardy, A. V.; Jordan, C. F.; Borts, I. H., and Hardy, Grace Campbell: Undulant Fever, with Special Reference to a Study of Brucella Infection in Iowa, Bull. 158, Nat. Inst. Health, 1930.

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7. Hughes, M. L.: Mediterranean, Malta, or Undulant Fever, New York, Macmillan Company, 1897.

8. Feldman, W. H., and Olson, Carl Jr.: Spondylitis of Swine Associated with Bacteria of the Brucella Group, Arch. Path. **16**: 195-210 (Aug.) 1933; Isolation of Bacteria of the Brucella Group from Apparently Healthy Swine, J. Infect. Dis. **54**: 45-50 (Jan.-Feb.) 1934; Isolation of Bacteria of the Brucella Group in Cases of Spondylitis of Swine: An Additional Study, J. Am. Vet. M. A. **84**: 628-634, 1934.

9. Kulowski, Jacob, and Vinke, T. H.: Undulant (Malta) Fever Spondylitis, J. A. M. A. **99**: 1656-1659 (Nov. 12) 1932.

examination, an explanation for the difficulty in diagnosis of the human disease is at hand.

I shall draw from my own experience certain conclusions as to the diagnosis that the patient with the chronic form of the disease generally receives. I have been consulted by a number of patients with the chronic form of the disease who have been fortunate enough to receive, finally, the correct diagnosis. Usually there was a long delay before the correct diagnosis was given, and in the meantime the diagnosis was almost invariably neurasthenia. Indeed, the textbook definition of neurasthenia describes chronic brucellosis: exhaustion, insomnia, irritability, and complaints of aches and pains for which no objective signs can be found.

It is a severe trial for the brucellosis patient, which contributes largely to the mental depression characteristic of the disease, that when he appeals for medical aid he is told that his illness is only imaginary and that all that is necessary for his recovery is that he should acquire the proper mental attitude.

There is no doubt that chronic brucellosis is often diagnosed as neurasthenia. Hence, an important problem presents itself: What percentage of the great number of cases of so-called neurasthenia is due to Brucella infection?

A study of a large group of cases which have been diagnosed as neurasthenia should yield information on that point. It cannot be expected, however, that clinical study will give the desired information, for the diagnosis of neurasthenia in any given case was made because the physicians who examined the patient were unable to find a demonstrable cause of the disease. Further, the fact that characteristic symptoms are lacking in acute cases and the knowledge of the disease in apparently healthy animals discourage the idea that clinical examination of chronic cases may lead to a correct diagnosis. It is necessary to resort to special laboratory tests.

The one infallible proof of Brucella infection is the cultivation of the organism from the blood or excretions. Cultures are frequently negative in acute cases, however, and there is a poor chance to obtain a culture from chronic cases.

A positive agglutinin reaction is suggestive of Brucella infection in a patient with undiagnosed disease. Consideration must always be given, however, to the fact that sometimes normal individuals respond to Brucella infection by the development of agglutinins in the blood without accompanying illness. On the other hand, negative agglutinin reactions are of little significance. Even in severe cases, in which Brucella infection is proved by cultivation of the organism, agglutinins may be lacking in the serum. That was true in my case, and Carpenter, Boak and Chapman [10] have recognized severe cases presenting a weak titer of agglutinins or none in the serum. Burnet [11] reported that 16.6 per cent of his cases failed to show agglutinins in the serum, and Simpson [12] reported a number of such cases. Infection without the occurrence of agglutinins would be even more likely to occur in mild than in severe cases. Hence, a negative agglutinin reaction cannot be regarded as significant in chronic cases.

Because of the limitations of the agglutinin test a number of investigators have studied the possibility of detecting Brucella infection by means of cutaneous reactions following injection of various preparations derived from Brucella cultures.[13] They all concluded that the intradermal tests are useful in detecting Brucella infection. In interpreting the results of cutaneous tests, however, consideration must be given to the fact that normal persons may develop cutaneous hypersensitiveness without symptoms of illness as a result of Brucella infection and that cutaneous sensitiveness remains after recovery from brucellosis.

Since none of the three mentioned tests for the detection of brucellosis give results that may be interpreted as definitely positive or negative evidence of brucellosis, a consideration of the combined results of all three tests is the best procedure now available for the diagnosis of this disease. Huddleson, Johnson and Hamann [14] suggest that a fourth test, the opsonic power of the blood, be included. The practicability of their suggestion has not as yet been confirmed.

In considering the incidence of chronic brucellosis in this country it is pertinent to consider the distribution of the causal organism. It exists in every country where cattle are raised and is excreted in the milk of infected animals. The disease also affects other domestic animals, including swine, sheep, goats and horses. The human disease may be derived from any infected animal. It is impossible to compile accurate statistics of the distribution of the disease in domestic animals, but estimates have been made following tests on cattle in various parts of the United States. According to these estimates, from 6 to 10 per cent of the cattle of this country are excreting Brucella in their milk. A considerably larger percentage of cattle are infected, for not all infected cattle excrete the organism in their milk.

SUMMARY

The main facts relative to the incidence of chronic brucellosis may be summarized as follows: 1. Contact with the causal organism is of common occurrence. 2. The severity of infection is known to vary from the acute disease to a form so mild that the subject is unaware of the illness. 3. Clinical diagnosis is extremely dfficult, even in severe cases. 4. Brucella infection is known to occur in animals that appear to be healthy. 5. There exists in this country a common malady—the so-called neurasthenia—which in its clinical manifestations cannot always be distinguished from chronic brucellosis.

These facts challenge the right of a physician to make a diagnosis of neurasthenia—a diagnosis regarded as dishonorable by the patient, and also by his family, his employer and his friends — without considering, among other possibilities, the possibility of chronic brucellosis.

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CHORIONEPITHELIOMA

EARLY DIAGNOSIS BY THE QUANTITATIVE DETERMINATION OF ANTERIOR PITUITARY-LIKE PRINCIPLE FROM THE URINE OF PREGNANCY

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While the mechanism and the underlying nature of the increased excretion of the gonadotropic substances during pregnancy are still unsettled problems, the clinical value of the Aschheim-Zondek reaction for the diagnosis of both normal and pathologic pregnancy is well established.[1] Before this biologic test for living chorionic villi was discovered, the diagnosis of early chorionepithelioma was difficult or impossible. Bleeding following labor or molar pregnancy is the usual clinical sign pointing to the possibility of chorionepithelioma; however, the bleeding in early cases may not be associated with tumor formation or diagnostic curettings. Most cases of chorionepithelioma prior to the utilization of the Aschheim-Zondek test were not diagnosed until a uterine mass was palpable, until a curettage brought forth characteristic tissue, or until metastases in the lungs or vagina appeared. Often a mass was not palpated until metastases had already occurred. Curettage as a diagnostic method not only is uncertain because of the possible location of the tumor at a distance from the endometrium but is dangerous, because the site of a friable growth may be perforated. The use of the Aschheim-Zondek test following mole obviates the necessity of curettage and its attendant dangers and is a diagnostic method by which very early chorionepithelioma may be revealed—before a tumor is palpable or before hemorrhage occurs.

The value of such an accurate test is obvious. The cure of any malignant growth depends greatly on its recognition in an early stage of proliferation; this would hold true especially for chorionepithelioma, in which the degree of malignancy is great and metastases occur early. The detection of metastasis after operation for chorionepithelioma is possible with the Aschheim-Zondek test before clinical signs manifest themselves. If the Aschheim-Zondek test is negative after operation, one may be certain that recurrence or metastasis has not occurred, and therefore follow-up radiation therapy is unnecessary.

Whereas the occurrence of malignant chorionepithelioma is a rarity, hydatidiform mole, which in perhaps 10 per cent of the cases becomes chorionepithelioma, is not an uncommon condition. However, in most patients with hydatidiform mole the diagnosis is not made until the characteristic "grapelike" tumor is expelled. Cases have repeatedly been seen of prolonged bleeding in early pregnancy treated as threatened abortion for weeks before a mole was finally passed, the patient in the meantime developing a marked secondary anemia. In the quantitative hormone test to be described, an additional method becomes available in the diagnostic armamentarium for the recognition of hydatid mole in an early stage. In normal pregnancy the concentration of anterior pituitary-like substance in the urine begins to diminish after the sixth or eighth week. In hydatidiform mole the concentration increases progressively and rapidly. The high concentration of anterior pituitary-like substance in the urine of patients with hydatidiform mole was demonstrated by Fels,[2] Roessler,[3] Aschheim,[4] Zondek,[1] Philipp, Robert Meyer, Mazer and Edeiken,[5] and Ehrhardt,[6] and these authors have diagnosed mole in doubtful cases by this means. In most instances the quantitative method was a fractional one and involved the provocation of a typical reaction by minute quantities of urine rather than an estimate of the minimum number of mouse units per liter. For example, Ehrhardt in one case obtained a positive reaction with $\frac{1}{520}$ cc. of urine, and in another with $\frac{1}{260}$ cc.

The quantitative estimations of gonadotropic factor in the urine in chorionepithelioma have been reported by Fels, Robert Meyer and Ehrhardt. Fels, in a case of testicular chorionepithelioma, demonstrated the presence of 33,000 mouse units per liter of urine; Robert Meyer 70,000 mouse units per liter in a case of renal chorionepithelioma, and Ehrhardt 100,000 mouse units per liter in a case of primary uterine chorionepithelioma.

It is our purpose in this paper to describe a simple method for the quantitative determination of anterior pituitary-like factor in the urine, to stress the value of this test in the early recognition and differential diagnosis of chorionepithelioma (and hydatidiform mole), and to record an unusually early chorionepithelioma.

TECHNIC

While the Friedman rabbit test seems now to be the method of choice in the diagnosis of pregnancy, the original mouse or rat test is distinctly preferable for the exact quantitative determination of anterior pituitary-like substance in the urine. The original Aschheim-Zondek method was therefore used, with slight modification, as follows: The patient's morning urine specimen is diluted with physiologic solution of sodium chloride in fractional concentrations such as 1:10, 1:50, 1:100 and 1:1,000. From three to five infantile white female mice, weighing from 6 to 8 Gm., are injected with a total of 3 cc. of each of the dilutions within 100 hours. The animals are thereafter examined for the presence of vaginal cornification and ovarian stimulation, such as folliculation, hemorrhage and luteinization, as stated in a previous communication.[7] On the assumption that a positive reaction would not be obtained with any of the dilutions but only with the undiluted native urine specimen, this would indicate that 3 cc. of urine contains at least 1 mouse unit, or 1 liter of urine a minimum of 333 mouse units. Accordingly, a positive reaction obtained with a 1:10 dilution would indicate a minimum excretion of 3,330 mouse units per liter; a positive reaction with 1:100 dilution, an excretion of 33,300 mouse units, and so on. It has been established that, in terms of mouse units, the excretion of the gonadotropic substance amounts to from 5 to 10 mouse units per liter of urine in both normal man and woman. This amount rises sharply to from 5,000 to 20,000 mouse units in normal pregnancy, and any amount above 20,000 mouse units is indicative of the presence of a pathologic pregnancy such as hydatid mole or chorionepithelioma.

From the Departments of Gynecology, Pathology and Metabolism of the Michael Reese Hospital.

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REPORT OF CASE

Mrs. S. S., aged 36, had her last regular menstrual period, July 10, 1933. On August 25, she began to bleed profusely with the passage of clots. The uterus was enlarged, soft and globular, and a tentative diagnosis of pregnancy with threatened abortion was made. The bleeding stopped in eight days and the patient was well until October 30, when, following a profuse hemorrhage, a large hydatidiform mole was passed. Under ethylene anesthesia the cervix was found to be completely dilated, and digital exploration of the uterine cavity revealed some loose hydatid tissue; however, no masses or evidence of muscular invasion were discovered. The endometrium was sharply curetted. The patient left the hospital in five days feeling well but began to bleed again, December 9, the bleeding lasting three days and simulating a menstrual flow. December 22, bleeding again occurred and this time was associated with severe pain in the left lower quadrant.

Bimanual examination at this time revealed an enlarged, soft uterus, and the left ovary was cystic and approximately the size of a lemon. An Aschheim-Zondek test, December 20, gave a very strongly positive reaction (reaction III). Because of recurrent bleeding, and because of the extremely positive Aschheim-Zondek reaction it was decided to curet again and look for evidence of recurrent mole or chorionepithelioma. December 23, a diagnostic curettage was performed and only tissue resembling normal endometrium was obtained. There was no evidence of hydatid mole or chorionepithelioma. The uterus was only slightly enlarged and the left cystic ovary was accidentally ruptured during the bimanual examination.

The microscopic report of the tissue removed was as follows: "Degenerated placental tissue with moderate acute and chronic inflammatory changes. Indistinct outlines of hydatidiform mole. No evidence of malignancy." Jan. 6, 1934, the pelvic status was normal. An Aschheim-Zondek test, January 8, was strongly positive with 10 cc. of urine. January 26 there began a normal menstrual period. Bleeding occurred again on February 13, but the uterus and adnexa showed no abnormalities on bimanual examination. February 22, the Aschheim-Zondek test was strongly positive with 10 cc. of urine. March 1, four months after the passage of the mole, 3 cc. of urine gave a strongly positive Aschheim-Zondek test with, quantitatively, 333,000 mouse units per liter of urine. The pelvic status on bimanual examination was entirely normal at this time. With this concentration of gonadotropic substance we strongly advised panhysterectomy. A roentgenogram of the chest showed no pulmonary lesions.

March 8, under ethylene anesthesia, the abdomen was opened through a midline incision from the umbilicus to the symphysis. The uterus and tubes appeared normal in all respects, and the ovaries were only slightly enlarged and somewhat cystic. In spite of the normal appearance of the pelvic viscera, the high quantitative gonadotropic contents of the urine impelled us to continue with our original plan and a panhysterectomy and bilateral salpingo-oophorectomy were performed. The patient made an uneventful recovery and was discharged from the hospital twenty days after operation. March 17, nine days after operation, the Aschheim-Zondek test was positive with 10 cc. of urine. March 27, 10 cc. of urine gave a questionably positive test (reaction I) and 5 cc. of urine gave a negative test. Quantative estimation of anterior pituitary-like substance in this specimen revealed 15,000 mouse units per liter, a very marked diminution in amount under the previous 333,000 mouse units and indicating a disappearance of the effect of the pathologic lesion. April 20, the Aschheim-Zondek test was completely negative, indicating no viable chorionic tissue (no metastases).

PATHOLOGIC REPORT (DR. OTTO SAPHIR)

The specimen consisted of a cervix, uterus, both tubes and both ovaries. The cervix and uterus together measured 8.5 cm. in length. The cervix was slightly dilated; the mucosa was in some portions distinctly granular in appearance but otherwise showed no gross changes. The uterine cavity appeared normal in size and the lower third portion showed a normal mucosa. The mucosa in the upper two thirds was distinctly elevated, grayish white and very soft and friable in consistency. There were distinct minute areas of hemorrhage present in this region. Occasionally, minute cystic structures were seen which were not well outlined and which might have signified an edema in this region. Minute cysts were also seen within the right upper horn of the uterus and within the myometrium. The left lateral wall of the uterus showed a small tumor measuring about 5 mm. in diameter which had the characteristics of a myofibroma. The myometrium in general was yellowish pink but showed no changes. Within the wall of the uterus, at a distance of about 6 mm. from the endometrium and situated in the posterior wall close to the left horn, there was a tumor which measured about 1 cm. in diameter, was roughly round, well defined and of a reddish yellow color (fig. 1). Its center was necrotic and contained much clotted blood. The peripheral portions of the tumor were very soft and contained much necrotic material and many hemorrhagic zones. The appearance of the tumor might well have been compared with that of a hemorrhagic corpus luteum. There was no extension of the tumor into the endometrium. As a matter of fact, evidence of it was not seen when the uterus was opened but was revealed only after multiple sections were made through the myometrium. The tubes showed no gross abnormalities. The right ovary was slightly larger than normal. There was a hemorrhagic cyst, 10 by 15 mm. in diameter, the wall of which was smooth and gray. One hemorrhagic corpus luteum cyst was seen which measured about

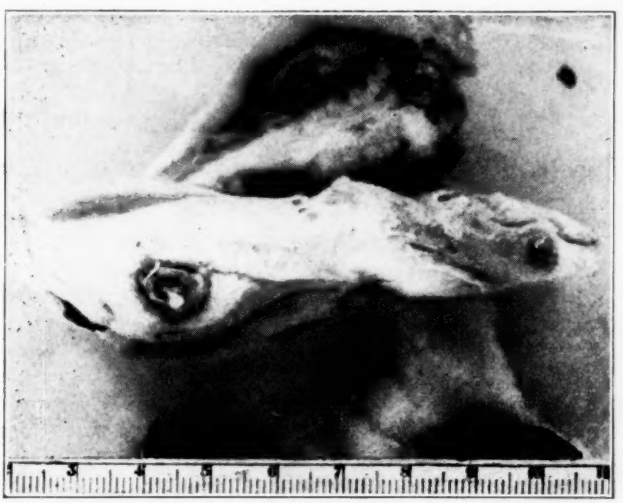


Fig. 1.—Early chorionepithelioma. Note tumor in the myometrium.

7 mm. in diameter. The left ovary also revealed one corpus luteum cyst measuring about 6 mm. in diameter, but no other changes could be recognized.

Microscopically, section of the endometrium revealed a diffuse infiltration of lymphocytes, endothelial cells and a few polymorphonuclear leukocytes. Occasionally, accumulations of plasma cells were seen throughout. There was a distinct increase of the connective tissue. The glandular structures were clearly recognizable. Some of the tubuli contained red cells and a few polymorphonuclear leukocytes. The myometrium throughout showed foci of lymphocytes surrounding small blood vessels. There was no evidence of decidua or villi.

Sections of the tumor, described grossly, showed the following changes: The bulk of the tumor showed only large areas of necrosis, with many red cells and much fibrin throughout, but no clearly outlined nuclei could be noted (fig. 2). Only occasionally, in the midst of the necrotic material, outlines of pink-stained structures were present, which resembled chorionic villi. In the vicinity of the villi a few cells showed a light stained cytoplasm and an eccentrically situated vesicular nucleus. The more peripheral portions of the tumor showed a variety of changes. There were many villi which varied in size; some of them were replaced by a hyalin-like material while others were necrotic. Between the villi there were many large cells with a light pink-stained, clear or foamy cytoplasm. In some fields these cells were filled with a golden brown pigment (apparently blood pigment). Often the foamy cells

surrounded the villi. Also, typical syncytial giant cell masses were seen, and giant cells showing three or four hyperchromatic nuclei, which were distributed diffusely throughout the cytoplasm (fig. 3). In addition, there were many lymphocytes throughout the sections, with foci of a reddish brown (blood) pigment. Typical Langhan's cells were not found.

PATHOLOGIC CHANGES AND CLASSIFICATION OF TUMOR

Within the myometrium, a tumor was found which consisted largely of villi, syncytial giant cells, much necrosis, fibrin and evidence of considerable hemorrhage. The question arose as to whether these anatomic changes indicated a chorionepithelioma, a syncytioma, or a so-called syncytial hyperplasia (Ewing). Whereas elements of placenta were surely present in the myometrium in relatively large masses, where under normal conditions they should not be present, morphologically the individual structures showed no evidence of a malignant condition; there were no mitotic figures; there was no invasion of blood vessels; the variation in size, shape and staining quality of the individual cells was not conspicuous. Evidence of regressive changes predominated. There was much necrosis, hemorrhage, and an abundance of phagocytic cells, some of which were laden with hemosiderin. There are instances of chorionepithelioma described, however, which were characterized by such regressive changes (supposedly due to a lytic toxin).

Fig. 2.—Section of tumor under low power, showing necrotic villi.

The presence of lutein cysts in the ovaries in our case may speak for chorionepithelioma. From the morphologic point of view, because of the absence of histologic evidence of a malignant condition, this tumor could not be called "typical chorionepithelioma." To differentiate the typical chorionepithelioma (choriocarcinoma) with its well known morphologic picture from other forms of tumor somewhat resembling the former, Marchand ascribed the term "atypical chorionepithelioma" to the latter. These are the cases, he believed, in which recovery was reported after curettage.

Syncytial hyperplasia (syncytial endometritis) is a type of lesion that has evoked discussion as to whether it is a new growth or an exaggeration of a normal reaction to pregnancy. If one regards this as a new growth, it also belongs to the group classified as "atypical chorionepithelioma" by Marchand.[8] Geist,[9] however, concluded that this is really not a neoplasm in the true sense of the word and created the term "syncytial hyperplasia." In this condition, syncytial invasion of the muscularis of the uterus constitutes the chief pathologic change in the entire process. In our case, while the anatomic description might well correspond to "syncytial hyperplasia," the fact that the lesion was found at a distance from the endometrium and grossly appeared as a tumor makes it unlikely that it should be designated as syncytial hyperplasia.

Syncytioma is a definite tumor made up of groups or islets of syncytial cells, and often giant cells, which form the smaller part of the tumor. The greater part is made up of blood clot, degenerating and necrotic tissue, fibrin and leukocytes, the function of the latter being phagocytic. This process, regressive in character, represents a transition from the syncytial hyperplasia on the one hand to advanced chorionepithelioma on the other. It is the first real step in the nature of a true neoplasm (Geist). Langhan's cells are absent in this tumor. Marchand includes this type of tumor under the broad term "atypical chorionepithelioma." Our case fits very well the description of Geist, and, with his classification, this tumor should be designated as syncytioma. However, if one should follow Marchand's classification, this would be an atypical chorionepithelioma.

COMMENT

This case illustrates the importance of determining quantitatively the amount of anterior pituitary-like substance in the urine following the expulsion of a hydatidiform mole. Although histologically our tumor was not the most malignant type of chorionepithelioma (choriocarcinoma), still the high gonadotropic concentration as a biologic indicator points to the potentiality of profound malignant change. This is important because the histologic picture is not always a true prognostic index in chorionepithelioma. This fact was well demonstrated in the unusual case recently reported by Lackner and Leventhal,[10] in which, microscopically, a typical choriocarcinoma was found, and, in spite of both pulmonary and vaginal metastases, cure (the patient is now well after eight years) followed hysterectomy and high voltage roentgen irradiation. It will be interesting, in the future, to note whether the amount

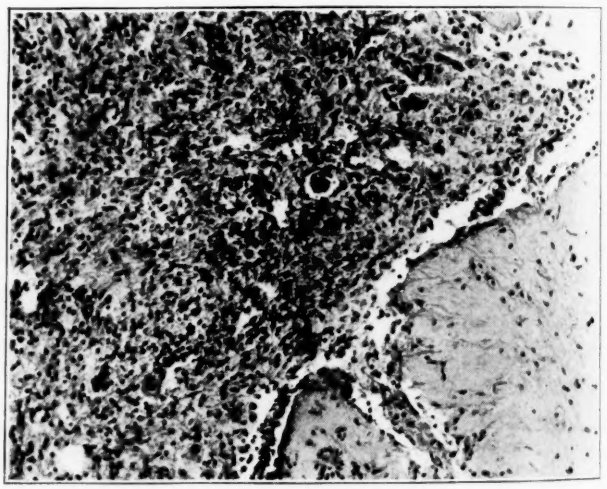


Fig. 3.—Section of tumor under high power, showing degenerated villi and syncytial giant cells.

8. Marchand, F.: Ztschr. f. Geburtsh. u. Gynäk. **39**: 173, 1898.
9. Geist, S. H.: Surg., Gynec. & Obst. **32**: 427 (May) 1921.
10. Lackner, J. E., and Leventhal, M. L.: Chorionepithelioma of the Uterus, J. A. M. A. **98**: 1136 (April 2) 1932.

of anterior pituitary-like principle bears any relation to the histologic classification of the choriomas (as set forth by Ewing).

The performance of a very radical operation entirely on the basis of a laboratory finding, and in the absence of any palpable or visible pathologic change, was justified by the discovery of a potentially malignant tumor in a very early stage of its proliferation. The disappearance of a positive Aschheim-Zondek test following operation is a true indication of the absence of live chorionic villi (recurrence or metastasis). Therefore the use of postoperative radiation therapy is unnecessary in the presence of a negative test. This would obviate the deleterious effects of irradiation in cases in which it is not needed.

SUMMARY AND CONCLUSIONS

1. The quantitative determination of the gonadotropic substance in the urine is an important biologic test in the early diagnosis of chorionepithelioma.

2. Following the expulsion of a hydatidiform mole, this quantitative test forms a prognostic index for chorionepithelioma formation.

3. In the absence of clinical manifestations, an amount of gonadotropic substance in the urine in excess of 20,000 mouse units per liter indicates an early chorionepithelioma.

4. A case of early chorionepithelioma was diagnosed and an operation was performed solely on the basis of the laboratory finding of 333,000 mouse units of gonadotropic substance per liter of urine in a patient who had expelled a hydatid mole four and one-half months previously.

5. Recurrence of chorionepithelioma or metastases may be discovered by the Aschheim-Zondek reaction, and this should determine the use of radiation therapy.

310 South Michigan Avenue — 104 South Michigan Avenue.

Clinical Notes, Suggestions and New Instruments

ABDOMINOSCROTAL HYDROCELE

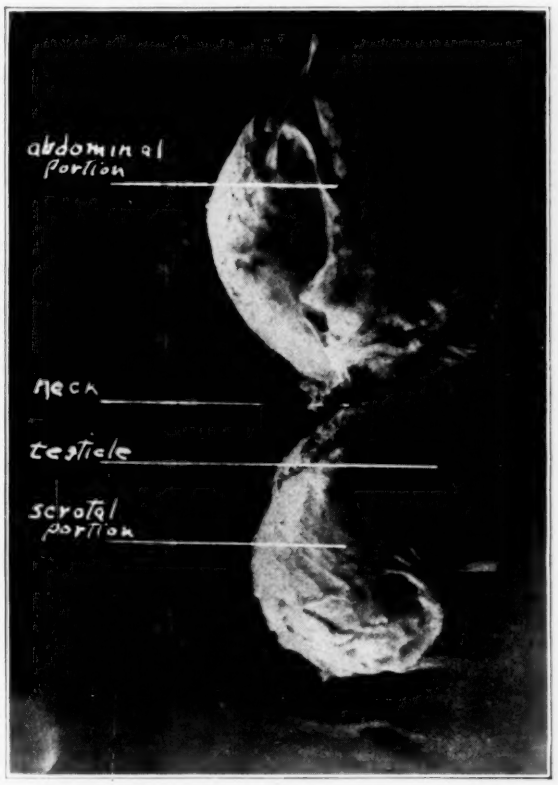
A BRIEF DISCUSSION AND REPORT OF A CASE

CHARLES S. ROLLER, M.D., CALUSA, CALIF.

There probably have been a good many abdominoscrotal hydroceles operated on, but very few cases are recorded in the literature. The condition is sufficiently uncommon to be reported, if for no other reason than in an effort to avoid errors in opening the abdomen for removal of these tumors, which are always extraperitoneal. Hydrocele of the cord and of the tunica vaginalis combined seems to me to be, without much question, the etiology. A hydrocele of the inguinal cord with a competent external inguinal ring could develop in no other location than within the inguinal canal until its size made it imperative that it expand elsewhere. The normal inguinal canal, to an expansive force within the canal itself, is weakest posteriorly. A developing tumor within the canal could most easily extend posteriorly by separating the peritoneum and preperitoneal tissues from the internal surface of the transversalis muscle. Anteriorly the very tough fascia of the external oblique muscle offers resistance, and medially, laterally and superiorly the conjoined tendon, the inguinal ligament and the arching or shelving fibers of the internal oblique and transversalis muscles are all firm barriers. Hence the developing hydrocele must go posterior to these structures, to spread out unhampered in all directions between them and the peritoneum. This is exactly the position that the abdominal portion of the tumor is found to occupy. When large, the hydrocele displaces and may be adherent to the bladder, may partially fill the pelvis and may intimately approach the great pelvic vessels; it may also displace the sigmoid colon well medially if the lesion is on the left side. The hydrocele may reach a great size and cause a huge visible tumor in the lower part of the abdomen. Hydroceles probably are all congenital. Perhaps a more exact name would be inguinoscrotal hydrocele.

The only symptoms are usually an abdominal and scrotal painless swelling. Catheterization to rule out residual urine, a cystogram, barium enemas with fluoroscopy and films of the large bowel should easily make the diagnosis and exclude an intra-abdominal tumor. The abdominal portion is usually not movable, is rather tense and distinctly cystic, and is painless.

Curtis [1] reported a case in a youth, aged 19 years, with a history of trauma as the etiology. The tumor was the size of a grapefruit and seemed to be part of a cystic swelling of the scrotum on the same side. Operation revealed an abdominoscrotal hydrocele, which was removed together with the testicle and a portion of the cord. Recovery followed. Herrmann [2] reported a similar case in a man aged 26, with a much larger abdominoscrotal hydrocele (containing 3 liters of fluid) and



Abdominoscrotal hydrocele sac. Appearance after removal and withdrawal of fluid for measurement. (It contained 3,400 cc.) The larger sac is the abdominal portion. The neck connecting the two tumors is well shown. The combined length is a little over 30 cm. (12 inches).

with a fluid connection between the scrotal and abdominal portions demonstrable by fluid wave before operation. The tumor and testicle were removed, followed by recovery of the patient. Lakhoti [3] reports a case of an Indian, aged 40, who was cured by operation without removal of the testicle. The tumor was rather small. Richards [4] in 1908 reported a case in an Egyptian and cited thirty-one other cases. Bickle [5] reported a case in 1919 and possibly was the first to state that abdominoscrotal hydrocele was a better term than bilocular hydrocele, with which I agree. Coleman [6] reported a case in an Egyptian with a huge tumor, the sac containing 27 pints (15 liters) of fluid.

1. Curtis, C. S.: Abdominoscrotal Hydrocele, J. A. M. A. **99:** 467 (Aug. 6) 1932.
2. Herrmann, S. F.: Abdominoscrotal Hydrocele, J. A. M. A. **98:** 399-400 (Jan. 30) 1932.
3. Lakhoti, B.: Bilocular Hydrocele Simulating Hernia and Hydrocele, Indian M. Gaz. **67:** 199 (April) 1932.
4. Richards, Owen: A Case of Double Abdominal Hydrocele, Lancet **2:** 533-534 (Aug. 22) 1908.
5. Bickle, L. W.: Abdominal or Bilocular Hydrocele, Brit. M. J. **2:** 13 (July 5) 1919.
6. Coleman, R. B.: Abdominal or Bilocular Hydrocele, Brit. M. J. **2:** 629-630 (Dec. 7) 1918.

REPORT OF CASE

History.—G. R., a white man, aged 26, an American, who was referred to me, complained of swelling in the left scrotum, swelling in the abdomen and loss of 15 pounds (6.8 Kg.) in the last two months.

Eighteen months before, the patient noted a swelling in the left scrotum, which gradually enlarged to the size of a grapefruit and was aspirated six months later. The swelling soon returned and became larger than before aspiration. About seven months before admission he noted, for the first time, that the lower left portion of the abdomen was swollen and hard. Both tumors had greatly increased in size since then. The patient had never had any pain but came for relief of the huge scrotal and abdominal swelling, which gave him a constant sense of weight in the scrotum and bothered him when working. He believed that his weight loss was due to a severe cold, which he had contracted two months previously and from which he had just recovered.

The past and family history are not important.

Physical Examination.—Inspection revealed a huge bulging tumor occupying the entire left lower part of the abdomen, extending to the left wall beyond the midline and upward to 3 inches above the umbilicus. This tumor was continuous by a neck of tissue, about 1 inch in diameter and 1½ inches long, with a swelling in the left scrotum of about 4 by 5½ inches. Both tumors were tense, cystic and painless, and contained fluid. The scrotal hydrocele sac was thick walled and transmitted light poorly. The testicle was felt with difficulty, posterior to the scrotal swelling, and seemed hard and enlarged and flattened. There was a moderate adenopathy of the left inguinal region. A definite tubular patent connection of fluid existed between the scrotal and abdominal tumors, as demonstrated by a very positive fluid wave transmitted between them. The neck connecting the two was cystic and was compressible between the fingers. There were no other abdominal changes. On rectal examination one could just detect the cystic tumor anteriorly and to the left.

The blood and urine were essentially normal. The Wassermann reaction was negative; the catheter revealed no residual urine. A cystogram revealed a normal bladder displaced about 3 cm. to the right. Fluoroscopy during a barium enema revealed the mass to be displacing the sigmoid markedly to the right, but the bowel was movable and otherwise normal. Fluoroscopy and films demonstrated the mass to lie anterior to the sigmoid. A film of the chest shows evidence of what probably had been a mild pulmonary tuberculosis some time in the past but with no evidence of activity at present.

The preoperative diagnosis was: (1) huge hydrocele of the cord and tunica vaginalis; (2) possibly a malignant tumor of the testicle?

Operation.—Under low spinal anesthesia (120 mg. of procaine hydrochloride) an incision was made from the left external inguinal ring to 7 cm. above and 4 cm. internal to the left anterior superior spine of the ileum. When the fascia of the external oblique was opened and the incision was continued up for several centimeters into the belly of the muscle, it was seen that the huge cystic tumor was beneath the internal oblique and transversalis muscles, pushing the peritoneum aside. The abdominal mass was connected by a patent neck to the hydrocele of the scrotum. The scrotal portion of the tumor was at once shelled out, along with the contained testicle. By using this as a very convenient method of traction, the abdominal mass was slowly separated, by blunt dissection, from the lateral pelvic wall, transversalis muscle, peritoneum, bladder and pelvic vessels. It was removed intact. Some care was necessary to prevent injury to these structures. Very little bleeding occurred. The spermatic artery and a few small vessels required ligature. The peritoneal cavity was not opened. The huge defect was obliterated easily by approximation sutures of a plain catgut. The transversalis and internal oblique muscles were approximated with interrupted sutures of no. 2 chromic catgut, and the repair was carried on down to the pubic spine in the same manner, the conjoined tendon and the shelving edge of the transversalis and internal oblique being sutured to the inguinal ligament, and the inguinal canal being thus completely obliterated. The incision in the external oblique muscle and fascia was repaired in the same manner down to the pubic spine, thus making a very firm repair of the huge potential hernia. A small drain had previously been inserted down lateral to the bladder and in the scrotum. The wound was then closed.

The patient made an excellent recovery aside from a mild attack of bronchial pneumonia suffered the first few days after operation. It will be remembered that only spinal anesthesia was given. The drains were removed on the third day and the skin sutures on the tenth day, and the wound healed by first intention. The patient was seen five weeks later in the outpatient department. He had gained 5 pounds (2.3 Kg.), the wound was firm, the left scrotum had shrunk to less than normal size and the abdomen was flat and soft. Six months later he had gained 26 pounds (11.8 Kg.) and was in excellent health.

The combined content of the abdominal and scrotal hydroceles measured about 3,400 cc. of clear light yellow fluid. Cultures remained sterile. A centrifugated specimen revealed detritus and a few degenerated epithelial cells. The testicle was small, colorless and flattened and surrounded by a thick mass of fibrous tissue, which appeared to have grown from the wall of the sac and capsule of the hydrocele. No malignant tissue was found.

942 Clay Street.

AN UNUSUAL CARPAL FRACTURE DISLOCATION: REPORT OF CASE

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AND

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CHICAGO

In reviewing the literature of the past ten years on carpal injuries we have been unable to find a reference to any case in which a fragment of the navicular bone and the entire lunate

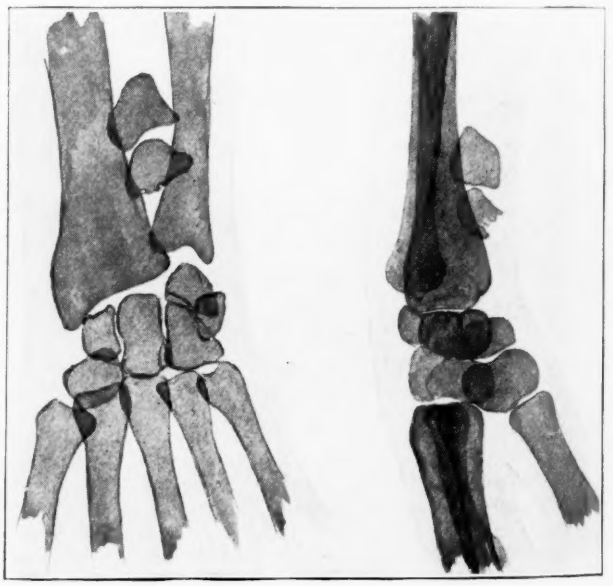


Fig. 1.—The distal fragment of the navicular bone and the multiangular major are seen articulating with the radial facet. The dislocated bones are seen rotated and pushed well into the forearm.

were dislocated into the volar surface of the lower third of the forearm.

In order to permit such a displacement between the flexor tendons, the annular ligament of the wrist must have been torn.

This case is being reported because the bones were dislocated so far from their normal position and because the end result of carpalectomy was excellent.

From the Fracture Service of the Cook County Hospital.

W. L., a Negro girl, aged 17 years, admitted to the Cook County Hospital, March 12, 1933, was in a condition of serious shock. While washing windows, she fell out of a fourth story window, landing in a cement courtyard.

The injuries are enumerated as follows:

1. Basal skull fracture with bilateral ecchymosis of the orbits and bleeding from the nose, associated with deep coma.
2. Depressed fracture of the right maxilla.
3. Comminuted fracture of the left mandibular angle.
4. Fractured superior and inferior rami of the left pubic bone, in good position.

Fig. 2.—Sectional decalcified bones. The articular surfaces of the bone are practically intact. The medullary portions of the bones show moderate fibrosis in a few areas. The bony trabeculations are all intact. This section shows the bone after having been dislocated into the forearm for approximately three months.

5. Fracture of the internal malleolus of the right ankle, in good position.
6. Fracture dislocation of the proximal two thirds of the carpal navicular bone and lunate into the volar surface of the forearm.

After two months of hospitalization the patient was able to be up and about. May 3, she was discharged from the hospital, temporarily, with a low grade osteomyelitis of the jaw and the dislocated carpal bones. She was instructed to return biweekly for observation. A posterior molded splint was used for one month only, in the treatment of the carpal injury.

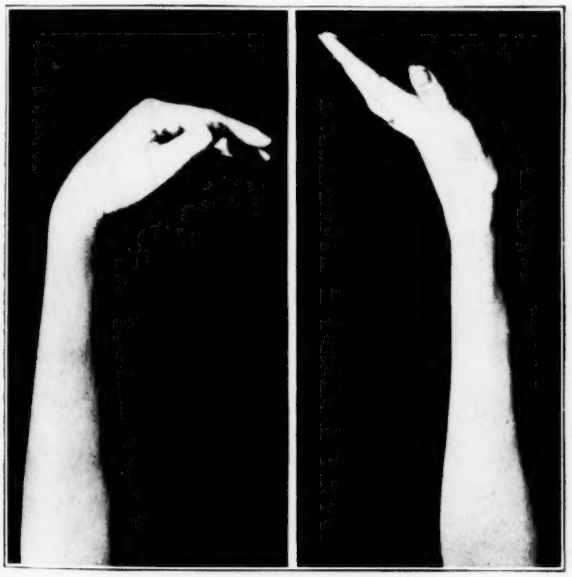


Fig. 3.—The amount of flexion and extension of the wrist nine months after the injury and six months after the carpalectomy. All motion of the wrist was painless at this time.

June 8, the carpal bones were removed under local anesthesia, because of progressive causalgia over the distribution of the median nerve and increasing paresis over the median distribution of the intrinsic muscles of the hand.

At operation the bones were found between the tendons of the flexor digitorum sublimis and the flexor digitorum profundus, with much scar tissue firmly fixing the bones to the epineurium of the median nerve. By sharp dissection the bones were liberated. The hand made an excellent recovery. When last seen, in January 1934, photographs were taken showing the limit of function, which was painless. The end result was very gratifying to both the patient and ourselves.

2947 Fulton Street.

Special Article

THE DIONNE QUINTUPLETS

ALLAN ROY DAFOE, M.D. (UNIVERSITY OF TORONTO)
CALLANDER, ONTARIO

The arrival into the world of one baby is generally a matter of some local interest, but the arrival of five babies is so unusual that the interest spreads far afield and the event becomes worthy of recording in medical history.

During the last five hundred years there have been thirty-two authentic cases of quintuplets recorded. Of these, only one group of all five lived about an hour, and of another group, only one of the five lived for

Front view of the Dionne home. The nursery window is to the left of the door.

fifty days. To these records I wish to add a short history of the birth and early care of the Dionne quintuplets. At the time of writing (July 28, 1934) the five babies are thriving and healthy at the age of 2 months and are gaining steadily in weight.

My practice is situated in a French-Canadian settlement, with my home in Callander, a small village on the East shore of Lake Nipissing, two hundred miles north of Lake Ontario. In this area there are about 3,500 people. My practice covers about four hundred square miles. The French-Canadians first came here about half a century ago, following lumbering activities of that time. Their families followed. They took up land and cleared their farms. This country is studded with lakes with many beautiful camping spots but the land is rocky, with fertile patches. There is lots of hard work necessary to live and actual money is noted for its scarcity. In the winter time the men get some extra work in lumber camps, but in the summer they make their living on their farms, by road work or in the sawmills. For the last two years a large percentage of the people have been on relief.

In origin the people are of Norman descent, rugged and virile. For over three hundred years they have lived in Canada. Their home life is remarkably pure. They live close to the soil and have been unspoiled by civilization: a sturdy, simple, and law-abiding folk, loyal to their race and to their faith. Race suicide is nonexistent, and it is not unusual to find families of from

The five other children of the Dionne family, with their father.

fifteen to twenty. One little parish of Bonfield has an average family of ten children.

Since the advent of motor cars and improved roads, the practice of medicine in this community has become easier; but even now, during the winter, the outlying areas are reached only with difficulty by sleigh.

REPORT OF CASE

History.—Mrs. Elzire Dionne, aged 25, began to menstruate at the age of 11 years. Menstruation was always irregular, between twenty-five and thirty days. The flow was profuse, lasting from five to nine days, accompanied by considerable pain.

She married at the age of 16 and had had six full time pregnancies, all the children living except one. There were no abortions or miscarriages. The first baby was born in 1926; the last baby was born in June 1933. A midwife only attended the birth of the first and last babies. I looked after the delivery of three of her babies, and with the exception of the third baby, which was an impacted frank breech presentation, the others were normal spontaneous deliveries. Her pregnancies had never been reported until she was in labor; consequently medical prenatal care was nonexistent. The labors had all been less than five hours, and with the exception of the first baby the puerperium was normal and the patient was out of bed, carrying on with light work, by the end of the fifth day. The babies appeared to be normal in size, but their actual weight was not taken. The mother never nursed her babies for more than a week and a half.

HISTORY OF THE SEVENTH AND PRESENT PREGNANCY

May 12, 1934, Mr. Dionne came to my office stating that his wife was enceinte and wasn't well; her legs were swollen, and frequent vomiting was taking place. I gave him an alkaline mixture for his wife and asked for a sample of urine. He did not think it necessary for me to go and see her. During the week he brought me two specimens of urine. The albumin was steadily increasing until it boiled almost solid. May 19, as he still did not think it necessary for me to see her, I told him that his wife must go to bed immediately and that he must obtain help in the house. The next day I insisted on seeing her. She was still up and had no help. I insisted then on her going to bed and saw to it that help was procured. The patient complained of blurred vision and vomiting. Her face was swollen and her hands were puffy. Both legs were markedly edematous up to the hips, and the toes were practically obscured. The covering skin was colorless and glossy in appearance, and deep holes were left after pressure. The abdomen was very large, and here there was further edema in the subcutaneous tissue anteriorly, and considerable in the dependent parts posteriorly. On palpation there appeared to be an increased amount of amniotic fluid, and the fetal parts were difficult to make out. I diagnosed a hydramniotic condition with a fetal abnormality but didn't particularly suspect multiple pregnancy. Her systolic blood pressure was over 200, and the urine was scanty in amount.

The mother told me she expected her baby in another month or so, but she wasn't clear about it as she had had a little bleeding at monthly intervals during the first five months. She also gave a history of labor-like pains for two hours at the beginning of the third month, after which she passed from the vagina a black oval object about the size of a duck's egg, streaked with white and firm in consistency. (This was not examined and of course no conclusion as to the possibility of another pregnancy could be made.) However, on careful questioning, the last normal menstrual period was made out to be October 20, 1933. The mother was put on a fluid diet and strict orders were given to keep her in bed. The husband reported twice during the next week, stating that the edema was disappearing and that the urinary output was increasing.

Labor.—At 4 a. m., May 28, a "hurry call" came from the Dionne home. I arrived to find the home in confusion, no preparation made for confinement, except a tea-kettle boiling

Mrs. Dionne with her five babies, 2 days old.

on the stove. Two babies had already been born, and a third was just making its appearance over the perineum. Two neighbors were acting as midwives. The father had disappeared. I scrubbed up in the best way available, took over the situation, and delivered the third baby. The neighbors then scurried around the house to get some wrappings for the babies and replenish the fire. In the meantime, another amniotic sac was presenting itself at the vaginal orifice and a little pressure over the abdomen brought another baby into the world.

This one was followed by still another. The last two babies were born within intact amniotic sacs and could be seen moving their arms and legs through the transparent walls.

In the early hours of the morning and still sleepy from a previous obstetric case that night, the whole situation seemed to be unreal and dreamlike, but I mechanically went about the business of looking after the babies. I tied the cords of the second two. The first cord had already been looked after by

Father, mother, grandfather and the five children when 2 months of age. From left to right, Marie, Emelie, Cecile, Annette, Yvonne.

the midwife and tied off with ordinary twisted thread from a spool. When the babies were breathing and whimpering, I ruptured the sacs of the last two and carried out the same procedure with them. The three larger babies were born first and the two smaller ones last, but the exact order of birth sequence is not known. All of the babies by this time were breathing and crying fairly vigorously for their size. I didn't see how all of the babies could possibly live, so I baptized them separately. They were then wrapped in the only covering available, which proved to be remnants of cotton sheeting and old napkins, and then laid on the corner of the bed and covered with a heated blanket.

My attention was then centered on the mother, as she suddenly went into a condition of shock. There was very little external bleeding, but the uterus was large and flabby, the patient was cold, and the radial pulse had disappeared. The fundus was gently massaged, and solution of pituitary and ergot were given. In a short time the pulse picked up a little but was still fast and weak. Slight color appeared in her face and the uterus hardened. In about twenty minutes from the birth of the last baby, the five cords descended and the uterus rose in the abdomen. With gentle pressure from above and guidance from below, the placenta was delivered. It was accompanied by a considerable amount of blood. The patient was then covered with blankets and the fundus held.

The Placenta.—The placenta was irregular in outline, with the cords of various lengths emerging from it at different points. There was no separation into sections in any way. The blood vessels ramified in all directions from the areas where the cords entered, and appeared to intermingle with one another. It was definitely a single placenta.

The mother in the meantime was not recovering and my attention was immediately called to her condition. Blood was oozing away and the uterus was impalpable. In spite of more solution of pituitary and ergot, she presented the appearance of a dying woman. The husband was still missing and it was my duty to get the priest, as no one else was available with a car. Reluctantly leaving the midwife holding the fundus, I hurried away to bring the priest, a distance of two and a half miles. In the meantime, amidst all the confusion that took place in the home, the placenta was unfortunately carried out and destroyed.

On returning, I found the mother's condition improving though there was still a moderate amount of blood oozing away. This improvement progressed and two hours later she was definitely out of danger.

Blankets were put into the oven to heat, and these were wrapped around the babies and changed repeatedly. Some one was sent over to a neighbor's for a basket and returned with an ordinary butcher's meat basket. The heated blankets were placed in the bottom of the basket, and the babies wrapped in their warm covering were placed in a row and covered with a heated blanket. The top blanket was changed frequently, and three hours later the babies were taken out singly, placed on a warm blanket, gently rubbed with warm olive oil, and then returned to the common basket.

First Week.—For twenty-four hours nothing was given to the babies but a few drops of warm water from an eye-dropper every two hours. A larger laundry basket was obtained on the second day and a few hot water bottles were located, which made it easier to keep up the temperature. A graduate nurse was employed that first afternoon, followed in two days by another, and then on the fifth by still another one. After twenty-four hours, feedings were started with a few drops of 7-20 mixture with corn syrup, together with from 1 to 2 drops of rum. Efforts were made to obtain milk from the nursing mothers in the district. The supply was meager but that which was located was added to the 7-20 mixture. On the fourth day we were using mother's milk sent by Dr. Bundesen of Chicago, and from that time on, full strength mother's milk has been used entirely to feed the babies. Dr. Alan Brown, through the Sick Children's Hospital, Toronto, has most generously provided our growing daily needs. Lately this has been augmented by a supply of milk from the Royal Victoria Hospital, Montreal, through the kindness of Dr. John Fraser. On the fourth day the babies were all able to take their nourishment with a Brecht feeder and this method of feeding has

Madame Benoit La Belle, midwife.

been continued throughout. The amount taken at each feeding at first was about 3 cc., and this has increased gradually until now they are eagerly taking about 3 ounces every three hours. There were no scales small enough to measure accurately the separate weights of the babies, but on May 29 (second day) their combined weight was 13 pounds 6 ounces in a scoop scale. An excellent pair of scales arrived for use on the sixth day, and the graph may be seen in the accompanying chart.

The first incubator was brought from Chicago on the third day, and the three smallest babies were placed in it, the other two remaining in the basket. Within a week, another incubator arrived and then finally there was one for each baby. The temperature was kept between 87 and 90 at first. As time went on the temperature was gradually lowered and maintained at 84. The moisture was kept up by sponges within the incubators soaked in hot water. As the humidity of incubators is so important, I was able to procure humidity recording instruments, which were hooked on the inside of each incubator. These were kept between 50 and 55 degrees. The incubator that arrived first was made with a hollow frame, a glass-hinged top fitted with a thermometer and a sponge holder. It was heated by hot water in a copper tank. The other incubators were similar in construction but heated by "little pigs" placed in several small compartments with movable doors.

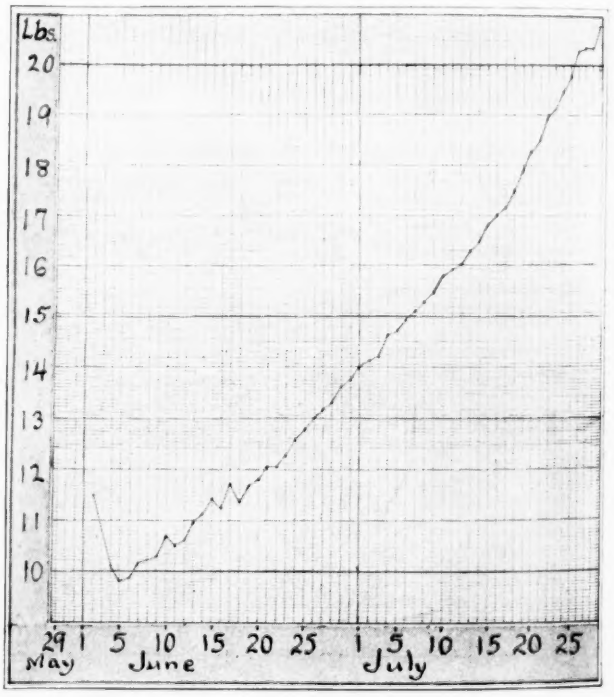
Marie Dionne, aged 2 months, weight 3 pounds 5 ounces.

The first week was a nightmare with the frequent alarms, and innumerable trips sandwiched between my other calls. The babies needed constant supervision and frequent stimulation to arouse them out of their attacks of cyanosis. On the fifth day the three smaller ones were markedly distended and looked worse than usual. There had been no bowel movement for two days. I gave them all a saline enema with a fine catheter and a hypodermic syringe and obtained quite a few yellowish black pellets. They seemed to pick up after this and took their food better. Within a week, cylinders of 95 per cent oxygen and 5 per cent carbon dioxide were obtained, with a reducing valve and an ordinary inhalator. This gas then replaced all other methods of stimulation and the rum rations were seldom issued. (Yandell Henderson of Yale was largely responsible for the introduction of this method of treatment for asphyxia of the new-born.) It certainly was most valuable with these babies. Inhalations were given for a few minutes before each feeding in the early stages and with every attack of dyspnea and cyanosis. There was a decided maintained improvement following the use of the gas mixture. All the babies began to show a slight but perceptible gain in weight. Even yet the smaller babies frequently become cyanotic, and we are still using the same gas mixture daily.

Second Week.—Supplies and equipment were pouring in, and we now had an opportunity to organize our forces and lay out a campaign. The doors and windows were all screened to shut out flies and mosquitoes. The babies' room was carefully gone over and all possible measure of aseptic technic introduced, including gowns and masks. The nurses through a women's organization of North Bay made special little Red Riding Hood dresses without sleeves, absorbent cotton gauze jackets, rectal pads, and fashioned the diapers to suit their small bodies. Each baby even had its own pile of mouth wipes. The rest of the children of the family were moved to other quarters, as two or three of them had developed bronchitis. The nurses have been intelligent, vigilant and most faithful, and a great deal of credit should go to them for the survival of the babies. Every physician knows the value of good nursing in the care of premature infants, and in this case the results are the reflection of the painstaking service carried out by the nurses.

I wish to acknowledge the valuable advice concerning modern methods and treatment given me by my brother, Dr. W. A. Dafoe of the Department of Obstetrics and Gynaecology, University of Toronto. From the first week I have been in touch with him personally and by telephone. On request he has visited the mother and children twice and, in addition to giving me medical help, he has aided me in dealing with promoters, reporters and the general public.

Subsequent History.—The babies have had their "ups and downs" since, but they are progressing favorably in health and gaining steadily in weight. They were at first fed every two hours. This was advanced to two and a half hours and then to three hours. The feedings are given to them in their incubators. They are moved out as little as possible. Once a day they are given olive oil baths. The babies appear to resemble one another considerably, and their eyes are beginning to follow movements near them. Little Marie has a hemangioma over the right thigh, which is growing. It will be treated with radium. The mother developed a phlebitis of the long saphenous vein in the right leg on the eleventh day. She had been sitting up for two days. The patient was put back to bed until her temperature was normal for two weeks. She is quite well now.



Composite weights of the Dionne quintuplets.

COMMENT

The publicity in connection with this case has been a serious problem and has caused me considerable trouble and worry. There has been no let-up from the moment of the uncle's naive enquiry to the North Bay paper as to how much it would cost to insert a birth notice for five babies born at one time. At first I

resented what I felt was an intrusion into my private and professional affairs. Then I came to realize that I had no right to object to what had become a matter of continent-wide interest. I have been increasingly grateful to the newspapers for the invaluable supplies and equipment which from the beginning came as a result of this publicity. As for myself, I have had an opportunity which I could never otherwise have enjoyed of meeting by letter, or in person, some of the outstanding men of our profession in Canada and the United States.

It would be impossible to thank the many people "in" and "out" of the profession whose help has enabled us to keep the children alive. We have indeed appreciated all that has been done. I should like to mention particularly the work of the Canadian Red Cross Association, which from the first has given cordial cooperation and has taken over a good share of responsibility for the welfare of the babies. Above all, we are grateful to the Ontario government, which has supplied the whole family with food and clothing, has repaired the road, and has definitely supported our efforts against public display. With such cooperation we hope the babies will continue to thrive and will be a credit to their family and to their country.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

H. A. CARTER.

FOREGGER INFANT RESUSCITATION OUTFIT ACCEPTABLE

The Foregger Infant Resuscitation Outfit is manufactured by the Foregger Company, Inc., New York City. It is an apparatus which permits the use of two standard mixtures of carbon dioxide and oxygen alternately; viz., 30:70 and 5:95. One unit was examined in a clinic acceptable to the Council. The report is as follows:

Observations were made on twelve newly born infants showing varying degrees of asphyxia. Treatment for asphyxia was instituted immediately following delivery. The menstrual age was estimated at 40 weeks in ten cases, 38 weeks in one case and 28 weeks in another.

The methods of delivery varied. Three babies were delivered spontaneously, two by laparotrachelotomy, three by breech extraction, two by difficult high forceps operations, and the remaining two by low forceps operations.

Fetal distress was observed in four cases prior to delivery, which was evidenced by alteration of fetal heart tones and the presence of meconium in the amniotic fluid.

DESCRIPTION OF FOREGGER OUTFIT

The apparatus consists of a sturdy machine which permits the administration alternately of two standard mixtures of oxygen and carbon dioxide. There is an accurate metric gage on the apparatus which permits the control of the amount of gas used, thereby making the operation of this apparatus more economical. The inhalation mask, with its attached rubber breathing bag, makes the operation of tracheal insufflation more simple. The safety valve eliminates the danger of too great gas pressure in carrying out the foregoing procedure.

CRITERIA OF ASPHYXIA

The degree of asphyxia varied. The criteria used in our observations included apnea, cyanosis, or pallor, flaccidity and the absence of or a diminished pharyngeal reflex.

TECHNIC OF RESUSCITATION

The asphyxiated infants were handled as little as possible, the nasopharynx being cleansed of mucus by either postural drainage, the use of the gloved finger or, when necessary, the use of the tracheal catheter. The body heat was conserved as much as possible by the covering of the infant and by the use of hot water bottles. If the period of apnea was long, a mixture of carbon dioxide and oxygen was used. By our previous work, the amounts of carbon dioxide and oxygen found to be the most useful were those of 30:70 and 5:95 ratios. The asphyxiated infants were given the 30 per cent carbon dioxide mixture first and gentle rhythmic compression of the chest was used until spontaneous respiration was established. This mixture was then discontinued and the 5 per cent carbon dioxide and 95 per cent oxygen mixture administered.

It is to be understood that tanks containing any percentage of carbon dioxide and oxygen can be attached to this apparatus. One could attach a tank containing the desired percentage of carbon dioxide and oxygen and another containing pure oxygen should the user so desire.

ETIOLOGY OF ASPHYXIA

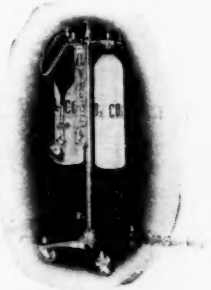
The etiology of asphyxia was obscure in three cases. Trauma was cited in five cases and aspiration in eight cases. A combination of the latter two contributory etiologic factors were blamed in four cases. Seven of the mothers had received narcotics during the first stage of labor. One mother had received only pentobarbital for analgesia. Narcotization was ascribed as the etiologic factor in four cases. A diagnosis of fetal narcosis was made from the history, pupillary reflexes, and the response to ventilation of the lungs with oxygen and carbon dioxide. In fact, the latter sign has proved to be almost pathognomonic.

ASPIRATION

Aspiration of mucus in varying amounts was listed as the contributory factor in eight cases. The measures already mentioned were taken to remove this obstruction.

TRAUMA

Trauma occurred to a mild degree in four cases. In one case, severe trauma was present. A difficult breech extraction of an 8 pound 5 ounce (3,770 Gm.) male infant was done through a contracted pelvis. The infant suffered from a depressed skull fracture and a complete fracture of the right clavicle. Nevertheless, the oligo-apnea was relieved promptly, following the removal of aspirated mucus from the trachea and the administration of ogygen and carbon dioxide. Our observations lead us to believe that trauma has a definite relationship in the association of narcotization with asphyxia.



Foregger Infant Resuscitation Apparatus.

CIRCULATION

No definite observation was made of the fetal circulation following delivery in four cases, but heart action was described as normal in eight cases.

NATURE OF RESPIRATION BEFORE TREATMENT

The nature of fetal respirations at birth were noted as follows: none, three; gasps, eight; poor, one.

PHARYNGEAL REFLEX

The character of the pharyngeal or gluteal reflex was found to be our best index as to the degree of asphyxia present. There was no notation of this observation in one case. It was described as absent in three cases, fair in one case, and good in seven cases.

TIME RELATION TO TREATMENT

Treatment was given immediately following delivery in all cases of apnea or oligo-apnea. Gasps had occurred before treatment in eight cases, but in several of these respiratory efforts ceased until further stimulation by gaseous resuscitation was used. The average interval between delivery and beginning treatment was from three to five minutes.

RESULTS

Treatment was usually continued from two to ten minutes. In one case intermittent treatment was given until postnatal death occurred several hours later. The condition of the infants

was described as good on leaving the delivery room in nine cases, fair in two cases and poor in one case. There were two postnatal deaths. One was a previable fetus, which was included in the series only to demonstrate how respiratory efforts could be repeatedly stimulated over a period of time by the use of gaseous resuscitation procedures. The second postnatal death was that of a 2,765 Gm. male infant delivered by cesarean section from a mother suffering from severe preeclamptic toxemia.

It should be remembered that the stronger percentages of carbon dioxide and oxygen or mixture with oxygen should be utilized for only a very brief period of time, following which the infant should be given a mixture containing either a very low percentage of carbon dioxide or pure oxygen. This should be discontinued promptly as soon as circulation is well established and the infant's oxygenation is good.

The Foregger Infant Resuscitation Outfit is included in the Council's list of accepted devices for physical therapy.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING SPECIAL REPORT, WHICH HAS BEEN SUBMITTED TO THE FOOD AND DRUG ADMINISTRATION OF THE U. S. DEPARTMENT OF AGRICULTURE, THE NATIONAL INSTITUTE OF HEALTH, THE NATIONAL FORMULARY COMMITTEE AND THE COMBINED CONTACT COMMITTEE OF THE AMERICAN DRUG MANUFACTURERS' ASSOCIATION AND THE AMERICAN PHARMACEUTICAL MANUFACTURERS' ASSOCIATION. THESE ORGANIZATIONS HAVE GIVEN PERMISSION TO QUOTE FROM CERTAIN OF THEIR PUBLICATIONS.

PAUL NICHOLAS LEECH, Secretary.

REPORT ON STERILITY OF AMPULE PREPARATIONS

An article by Gershenfeld in the *American Journal of Pharmacy* (**105**:155, 1933) raised anew the question of the sterility of ampule preparations of medicinal products used for parenteral injection. In the discussion of this question before the Council it became apparent that neither the Council nor the National Institute of Health was in a position to take up a bacteriologic survey of these products or to establish an extensive system of control. It was agreed that, although a bacteriologic survey could not be undertaken now, it would be advantageous for the Council and other interested organizations to have a report on the procedures and tests used by manufacturers to determine whether or not the contents of their ampule preparations are sterile.

The chief of the Food and Drug Administration of the U. S. Department of Agriculture, under date of Aug. 2, 1933, informed the Council that an investigation of the sterility of ampule preparations carried out by the administration in 1925 and 1926 showed that these preparations were sterile. This official stated that following Gershenfeld's article a resurvey was started of these ampule preparations. He anticipated that this survey would take some time because of the large number of ampule products offered for sale on the American market. Since the need for control has been recognized, the Council noted with satisfaction this significant statement in the letter from the Chief of the Food and Drug Administration:

> "The article in your report raises the question as to whether or not some agency of the United States Government should maintain a check over these articles. Their label claims bring them under the control of this Administration and it is our purpose to keep as complete a check as possible on such preparations."

After the action of the Council it was discovered that at least two other organizations are interested in the question of the sterility of ampule preparations. These are: (1) the National Formulary Committee, whose Bulletin for Sept. 14, 1933, pp. 1163-1165, contains a discussion of the question with proposed regulations, (2) the Subcommittee on Standard Methods for Testing Ampoule Solutions for Sterility of the Combined Pharmaceutical Contact Committee of the American Drug Manufacturers' Association and the American Pharmaceutical Manufacturers' Association. These organizations have generously responded to the requests by the secretary of the Council on Pharmacy and Chemistry for their reports and for information. The "Eleventh Report of the Combined Contact Committee of the American Drug Manufacturers' Association and the American Pharmaceutical Manufacturers' Association," and two more recent reports of this Committee (received Nov. 23, 1933, and April 23, 1934) have been used as sources of material in the preparation of the present article. In the last report of the subcommittee of the Combined Contact Committee of the A. D. M. A. and the A. P. M. A. definite recommendations as to the testing of ampules were made, and these changes were to be incorporated in the National Formulary Bulletin. Details of these recommendations will be given in a later section of this article.

The secretary of the Council sent a questionnaire to the manufacturers of ampule preparations whose products are listed in New and Nonofficial Remedies. The replies to the questionnaire were placed in the hands of a referee of the Council on Pharmacy and Chemistry charged with the preparation of a report. The purpose of this report was chiefly to place on record information of interest to members of the Council, manufacturers of ampule preparations, the Food and Drug Administration and the organizations concerned with the question of the sterility of the contents of ampules of injectable materials. Neither the referee nor any one else as far as he knows has any reliable information on the incidence of bacterial contamination of these products and, of more significance, the incidence of infection due directly to the injection of ampuled material contaminated with pathogenic bacteria. Without this information it is not wise to attempt to recommend special regulatory rules.

It is obvious, however, that these injectable preparations should be sterile, and the advisability of the adoption of standard methods of testing for sterility is clearly indicated. In view of the fact that this question is under discussion by other bodies as directly concerned as the Council, no specific action was taken by the Council; but its information and the opinions expressed in the reports were placed at the disposal of all interested groups, in the expectation that by a joint action a uniform and effective system of testing for sterility will be instituted.

In correlating the statements obtained in the replies from various manufacturers, some means of classification that would indicate the type of ampule preparations concerned was deemed necessary. For this purpose there was made a systematic grouping of the various injectable ampule, vial and syringe preparations that are described in N. N. R. In many cases it was found that manufacturers marketed preparations belonging to only one or two of these groups.

Injectable ampule and other preparations have been classified as follows:

GROUP I. *Biologic.*—This class includes serums, vaccines, bacterial toxins and modified toxins, allergenic and pollen extracts, gland preparations, and other products made by extraction of plant or animal tissue. All products of this class may be considered very susceptible to bacterial contamination.

GROUP II. *Chemical.*—Chemical substances which are actively bactericidal, such as soluble mercury salts, salts of other heavy metals, and other antiseptics.

GROUP III. *Chemical.*—Chemical substances in which bacteria and molds may grow, such as dextrose, glucosides, and preparations containing sugars or nonantiseptic carbon compounds.

GROUP IV. *Chemical.*—Products in which the growth of bacteria is not likely but which are not bactericidal and therefore may contain viable bacteria or spores. Most organic and inorganic substances belong in this class. Vegetable oil suspensions of insoluble mercury, bismuth and arsenic compounds are also included in this class because it is believed that the compounds may not be sufficiently soluble to have a bactericidal action. Some chemical compounds containing preservatives are also included because the preservatives are not present in high enough concentration to kill spores or resistant bacteria, although they may inhibit their growth.

Although the names of manufacturers and specific quotations from their replies to the questionnaire were included in the report presented to the Council on Pharmacy and Chemistry by the referee, it was considered advisable to omit from the

present article the names of the manufacturers who furnished the information here presented. For the sake of brevity only a summary is given of the data obtained.

Reports were received from twenty-six manufacturers out of the total of approximately thirty who have injectable ampule preparations listed in N. N. R. Of these twenty-six manufacturers, eight produce only ampule preparations belonging to biologic group I; four produce only ampule preparations in group IV; three produce ampule preparations in groups I, II, III, and IV; and five produce ampule preparations in groups III and IV. Ampule preparations of five other manufacturers are grouped as follows: I and III; I and IV; II and IV; II, III and IV; and III only. One manufacturer produces only ampule preparations in the form of dry powders to be dissolved and injected. Recently this manufacturer has presented for consideration by the Council an ampule solution of a chemical substance which would be classed in group IV.

The accompanying table summarizes the methods used for testing the sterility of ampules. Column one of the table shows the number of manufacturers having ampule products in each of the four groups. The second column shows the number of manufacturers producing products of the group indicated who use the National Institute of Health method, the third column shows the number using other methods of testing sterility, and the fourth column shows the number not testing for sterility.

Methods Used for Testing Sterility of Ampules

Group	Total Firms Producing Ampule Preparations in Group	Number Using National Institute of Health Method	Number Using Other Methods	Number Not Testing for Sterility
I. Biologic.....	13	11	2	0
II. Chemical.....	5	3	1	1
III. Chemical.....	11	5	5	1
IV. Chemical.....	15	6	7	2

From a consideration of this summary it may be seen that all of the reporting manufacturers who market products belonging to the biologic group I, with two exceptions, use a standard method of testing identical with or closely similar to the National Institute of Health method. One of the two manufacturers who use different methods reported a method of sterilizing and gave details as to the method of testing sterility that appear adequate. The other firm uses the official British method, the details of which are not at hand. From this survey it seems probable that practically all injectable preparations belonging to the biologic group I are adequately tested for sterility, in most cases by the National Institute of Health method, which up to very recently has been the only standard method for testing ampule sterility.

With regard to the chemical groups II, III and IV, the situation is somewhat different. It may be seen from the accompanying table that methods of testing these products are about equally divided between that of the National Institute of Health and other methods, which vary considerably in their degree of effectiveness.

Replies from some of the firms indicate that manufacturers who have reported that they use the National Institute of Health method actually use this method as a whole only for biologic preparations and apply it in a modified form to other classes of ampule preparations.

Eleven firms offer ampule preparations belonging to group III, preparations that will support the growth of bacteria, molds or yeasts. Five of these manufacturers use the National Institute of Health method for determining sterility. Four others reported methods that were not standard. For the most part these methods seemed to be at least partially effective in detecting contamination but in a few cases left something to be desired in regard to their adequacy. One firm, although stating that it tested for sterility, gave no details of the tests used. The eleventh firm of this group markets its ampule preparations without testing for sterility, and the methods of sterilization used by this manufacturer do not seem certain enough to justify selling their product without sterility tests. Of the eleven firms manufacturing products in group III, only two definitely stated in their reports that their preparations in this group were tested by special methods for molds.

Of the fifteen firms manufacturing ampule products in group IV, six use the National Institute of Health method of testing and one firm uses a method closely similar to this. Three firms offering products in this class have their products manufactured in Europe. Of these three, two gave no details of testing but indicated that their ampules were tested bacteriologically. The third gave enough details to indicate that the methods of testing as used were probably adequate. Of the remaining five firms in this group, two do no sterility tests on their products and the other three use methods of testing that are open to question as to their efficiency.

With regard to the ampule products of group II, substances that are self sterilizing, the opinion of manufacturers seems divided. Some firms have stated in letters that they test products of this class for sterility, whereas one or two others state that they do not test these products. The data from five firms presented in the table may not be an accurate statement of the status of testing of products of this class, since no definite statement on this point was made in most of the replies received.

One manufacturer offers several dry preparations sealed in ampules. Apparently no effort is made to keep these preparations sterile. Unless sterilization is carried out on the solutions of such products before use, it seems probable that both bacteria and spores may be carried over in the injected solution prepared from these dry powders.

Since several of the manufacturers in statements to the Council described in detail the recommendations of the National Institute of Health, a quotation of certain parts of this memorandum is given.* Most of the details of preparing culture mediums and sterilizing apparatus are omitted.

Memorandum of Details Under Section 36, Regulations of Biologic Products, U. S. Public Health Service, Miscellaneous Publication No. 10, Aug. 1, 1923.

"Bacterial tests are required to show sterility as regards organisms which will grow at ordinary temperatures; for all products except vaccine virus.

"Though preliminary tests on various media such as glycerin agar, ascitic or blood agar, etc., are to be used when the organism used in the manufacture of the product will not grow readily on ordinary media, the routine medium for testing sterility of all products is made as follows:

"To 8 kilograms of ground fresh meat freed from fat, there is added 16 liters of distilled water and the mixture is infused in the ice chest 24 hours. Sixteen liters of juice are squeezed out, heated in streaming steam for one hour, filtered through moistened paper, brought up to the original weight and sufficient sodium hydrate added to make the reaction of the final broth in the fermentation tubes 0.5 per cent acid to phenolphthalein or 7.5 on the scale of hydrogen ion concentration; 5 grams of sodium chloride per liter are mixed in and 10 grams of dry peptone per liter are placed on top of the infusion, which is then heated in steam for one-half hour."

Dextrose is added to a concentration of 0.03 per cent if there is not sufficient muscle sugar present in the broth.

"The broth is filtered through moist paper and placed in glass-capped Smith fermentation tubes containing at least 25 cc.—each with a 'seal' of at least 1.0 cm. in the open arm—and autoclaved at 15 lbs for 20 minutes. The Smith fermentation tubes should be in racks which facilitate tipping oxygen bubbles out of the long arm when hot or which allow such bubbles to flow out of the tubes while the heating is going on and which permit ready inspection of all parts of the tube for growth.

"Planting is done within 5 hours after the broth has cooled. In general, five drops of the fluid to be examined are planted in one tube and 20 drops in another tube; these are incubated at 37° C. for 7 days. The tubes should be examined on the 2nd, 4th, and 7th days after planting, and agitated only after 48 hours incubation, to insure initial anaerobiasis; the lowest part of the bend should be examined for slight growths, as well as both arms. In case the material is turbid (antirabic virus, etc.) transplants to fresh fermentation tubes, as well as smears, should be made on the seventh day."

The referee suggested several changes in this description of the preparation of this medium:

1. Omit the statement "0.5 per cent acid to phenolphthalein," as that method of titration and adjustment of reaction is now almost obsolete.

* While these matters were under consideration by the Council and other interested organizations the United States Public Health Service issued a series of new "Regulations for the Sale of Viruses, Serums, Toxins and Analogous Products in the District of Columbia and in Interstate Traffic," approved March 13, 1934, and published as "Miscellaneous Publication No. 10," U. S. Treasury Department, Public Health Service. A revised "Memorandum of Details" has not yet been issued by the Public Health Service. It is anticipated that within the next six months the National Institute of Health will issue a new "Memorandum of Details" containing statements of its requirements and methods for testing the sterility of the contents of ampules.

2. Use the expression "*p*H 7.5" in place of the words "7.5 on the scale of hydrogen ion concentration," as *p*H and hydrogen ion concentration are expressions with very different meanings.

3. Change the directions to provide for titration and adjustment of the reaction *after* the addition of the peptone. Most peptone preparations are acid. Hence titration before the solution of the peptone in the meat infusion may be unreliable as an index of the amount of alkali needed to make the reaction of the final mixture *p*H 7.5.

4. Use the word "anaerobiosis" in place of "anaerobiasis."

Following the directions for the preparation and tubing of the medium, the memorandum gives directions for sterility tests on bulk products and on final containers, stating the amount to be planted, the number of final containers to be tested, and the procedure to be followed if contaminations are found.

The Eleventh Report of the Combined Contact Committee of the American Drug Manufacturers' Association and the American Pharmaceutical Manufacturers' Association, published Oct. 27, 1932, makes the following recommendations in regard to ampule preparations:

It is recommended that

"*First*:—All ampuls of glandular products which are essentially preparations of biologic origin shall be tested for sterility according to the prevailing National Institute of Health method for testing biologic products for sterility.

"*Second*:—All ampul solutions containing germicidal substances in sufficient concentration to render them self-sterilizing may be marketed without sterility testing.

"*Third*:—The following provisional test is to be applied to all other ampul solutions until such time as more definite tests may be elaborated."

The report then recommends a method of testing ampules for sterility which is essentially the same as the National Institute of Health method.

More recently the Subcommittee on Standard Methods for Testing Ampoule Solutions for Sterility, American Drug Manufacturers, has made a report in which it is recommended that all manufacturers adopt standard methods of testing sterility. The report indicates that various modifications in the National Institute of Health method will have to be made in order to be applicable to the various types of existing ampule solutions, the diverse nature of ampule solutions being such that no one method is applicable to all of them.

The classification of ampule solutions suggested by the committee is as follows:

"*Group I.* All ampoule solutions prepared from gland products, which are essentially protein preparations of broad biologic origin. Such ampoules may contain nutritive material which would make for ease in discovering contamination. This group could well be tested for sterility by application of the present National Institute of Health method which is applicable to this type of preparation and which would reveal possible harmful contamination.

"*Group II.* Products containing germicidal substances in sufficient concentration to render the ampoule solutions adequately self-sterilizing. This group would also include preparations containing chemicals which, because of the reaction of the solutions in which they are offered, become effective sterilizing agents.

"*Group III.* Ampoule solutions containing sugars or other substances favorable to the growth of molds and/or yeasts.

"*Group IV.* Ampoule solutions containing chemical substances not included in groups I, II, and III."

This grouping of products corresponds fairly closely to the grouping used by the referee in the report to the Council. The categories and numbering are the same. The referee believed that the grouping used in his report has the advantage of being more specific and inclusive, and more adapted to the bacteriologic requirements. The definition of group IV of the subcommittee: "Ampoule solutions containing chemical substances not included in groups I, II and III" seems to the referee to be too indefinite to be serviceable. Further study may indicate the need for a miscellaneous group, but the establishment of such an ill defined class should be avoided if possible.

The recommendations of the Subcommittee on Standard Methods for Testing Ampoule Solutions for Sterility of the American Drug Manufacturers are as follows:

"We recommend that this committee be empowered to undertake the testing that will enable the classification of ampoule solutions in accordance with the above outline and to elaborate suitable standard methods for testing the members of groups III and IV, and

"Inasmuch as the National Formulary Committee has issued a proposed outline covering the sterility testing of ampoule solutions, and action at this time is necessary:

"It is the recommendation of this committee that the following be submitted to the National Formulary Revision Committee for inclusion in the forthcoming revision of the National Formulary."

There is then given a series of recommendations identical with those already quoted from the Eleventh Report of the Contact Committees of the American Drug Manufacturers' Association and the American Pharmaceutical Manufacturers' Association.

An examination of the section of the National Formulary Bulletin of Sept. 14, 1933, pp. 1163-1165, dealing with sterility tests on ampules shows that the recommendations contained therein are based on those which have been quoted. The paragraph on the number of ampules taken for sterility test is copied directly from the Eleventh Annual Report of the Combined Contact Committees of the American Drug Manufacturers' Association and the American Pharmaceutical Manufacturers' Association. The details on preparation of culture mediums and tests on bulk and final containers are a synopsis of the recommendations given in the National Institute of Health Memorandum of Details under section 36, Regulations of Biologic Products, except that in the National Formulary directions for preparing the medium, 0.03 per cent of dextrose is added as a routine. In this instance the directions fail to state that the addition of the dextrose, in the form of a sterile 1.0 per cent solution, should be done with sterile precautions.

At a meeting of the Combined Contact Committee of the American Drug Manufacturers' Association and the American Pharmaceutical Manufacturers' Association held in Washington beginning Feb. 5, 1934, several recommended revisions in the section on ampules of the National Formulary Bulletin were adopted. These are summarized as follows:

1. It was decided to omit the requirement for sterility tests on ampules of bismuth subsalicylate, mercury salicylate, mercury succinimide and methenamine.

2. The committee adopted a new method of testing ampule solutions in oil. This is quoted as follows:

"*Sterility Test for Ampoule Solutions in Oil.* Media used: Standard N. I. H. broth containing 0.03% dextrose.

"Quantities of 250 cc. each are filled into 500 cc. flasks and sterilized in the autoclave at 15 pounds pressure for 15 minutes.

"Plant the contents of each ampoule (but not more than 5 cc.) into a 500 cc. flask containing 250 cc. of medium. Incubate the flasks for 4 days at 37 C., shaking the flasks thoroughly twice each day. At the end of the incubation period inoculate 6 fermentation tubes from each flask, three with 5 drops and three with 20 drops, transferred by means of a sterile pipette. The fermentation tubes are then incubated for 7 days at 37 C. and are examined for evidence of growth on the second, fourth and seventh day after planting."

3. Recommended besides the standard test for bacteria an additional test for molds in ampules of dextrose and ampules of dextrose and sodium chloride as follows:

"*Ampoules of Dextrose.* Add additional test as follows:

"'With the additional test being made for the determination of yeasts and/or molds.

Medium:

Agar	20 Gm.
Peptone	10 Gm.
Maltose	40 Gm.
N/10 Hydrochloric acid	
Tap water sufficient quantity to make	1000 cc.

"Dissolve the agar, peptone and maltose in the water by means of heat, add a sufficient amount of the N/10 hydrochloric acid to bring the *p*H to approximately 5.5 when tested colorimetrically with methyl red. Fill 10 cc. quantities into test tubes, approximately 18 × 144 mm. in size and sterilize by Process D. Incubate the tubes for one day at 37 C. and for 3 days at room temperature as a check on the sterilization methods.

"From each sample plant 4 tubes of medium, two with 5 drops and two with 10 drops. Spread the liquid over the entire surface of the slant by gently tilting the tube after planting. Incubate the tubes for 4 days at room temperature (20 to 25) and 3 days at 37 C. Examine the tubes at 24-hour intervals for growth, spreading the film of liquid over the surface each day by tilting the tubes. If evidences of growth appear on any of the tubes they should be left undisturbed in order that colony growth may proceed.'"

Both of the newly recommended tests represent a significant step in advance. The test for sterility of ampule solutions in oil is apparently designed to separate spores and bacteria from the insoluble oily layer and bring them in contact with the nutritive medium. A special test for the detection of molds in ampule solutions of group III seems particularly desirable. Many of these organisms do not grow well at 37 C. in liquid mediums; therefore the use of some such medium as Sabouraud's agar and incubation at 22 C. is advisable. Although most organisms that grow only under these conditions are nonpathogenic, their detection serves as an index of nonsterility.

The Contact Committee has made no very definite recommendations with regard to testing ampule preparations containing various chemical substances such as those we have classified in groups II and IV. Obviously the question of whether or not a given ampule preparation is self sterilizing can be settled only by a test in which the bactericidal power of the solution against several species of bacteria, and bacterial spores, is determined. It does not seem safe to call an ampule preparation self sterilizing merely on presumptive evidence. But if an ampule solution can be shown by satisfactory tests to be self sterilizing, the omission of sterility tests on the product might be justified by the saving of trouble and expense.

The question remains open as to whether or not the ampule preparations of diverse nature included in the three groups of chemical preparations can all be adequately tested for sterility by a single standard method such as that of the National Institute of Health. In a recent letter one firm has stated that it does not consider the latter method adequate for the testing of its ampule product, which is of a biologic nature. It has supplemented it by special tests for anaerobes.

The Memorandum of Details under section 36, Regulations of Biological Products, contains in addition to the routine test, already quoted, directions for the testing of vaccine virus for anaerobes, but there is no information as to how widely this special method has been applied to other products.

The present status of the National Institute of Health method of testing sterility is probably best summarized by a recent letter from P. B. Dunbar, assistant chief of the Food and Drug Administration:

"The investigation of sterility of ampule preparations by the Administration mentioned on the second page of the report, has been under way for some time, and is still continuing. Since this investigation is not yet complete, it is perhaps somewhat premature to draw any definite conclusions concerning the incidence of bacterial contamination of such products. However, in a large number of examinations of ampule solutions made since the recent survey was begun in 1933, bacteriologists of the Administration have encountered no insterility. In making the examination, the Administration bacteriologists have followed the method recommended by the National Institute of Health. The procedures recommended by the National Institute of Health have been found readily applicable to the various types of ampule preparations included in the survey. Nevertheless, it is possible that some modifications of the recommended method might be made to permit the development of a simple standard method that will have a universal application in all laboratories for all types of ampule solutions. The Food and Drug Administration has not been able to conduct any research work to test possible changes to improve, or simplify, the method recommended by the National Institute of Health. Consequently, we cannot offer any constructive criticism of the method at this time."

Most of the recommendations for standard tests so far drawn up by the American Drug Manufacturers' Association, American Pharmaceutical Manufacturers' Association, the National Formulary Committee, and the Committee of Revision of the Pharmacopoeia of the United States and those submitted by several of the manufacturers are based directly on the Memorandum of Details under section 36, Regulations of Biologic Products, U. S. Public Health Service. This memorandum gives the most detailed and thorough description of testing sterility of any of the recommendations so far submitted, but, as has been indicated, revision of the directions given may be necessary before an effective standard method can be established. The further recommendations from the Contact Committee of additional tests for possible contamination in ampule solutions in oil, and the tests for molds and/or yeasts are indications of constructive work on the part of the manufacturers.

In addition to the methods already described, the U. S. Pharmacopeia proposes to have a method of procedure for determining the sterility of distilled water and physiologic solution of sodium chloride. The preparation of the medium and the details of testing are very similar to those of the National Institute of Health except that the medium contains 1 cc. of 1.0 per cent sterile dextrose solution added to each tube of 25 cc. and the directions call for the adjustment of the reaction to p_H 7.6 after the addition of the peptone.

MULTIPLE DOSE AMPULES

The referee has seen infections following the injection of material from multiple dose ampules. These have been due to contamination of the material by physicians when they withdrew portions of fluid from a large ampule and later used the remaining material for other injections. In practice, large ampules, once opened, may be exposed to contamination repeatedly during several hours. The referee knows of one instance in which severe cellulitis of the arms of recipients of injections were caused by injection of material (originally sterile), from a large ampule, which had been opened and partially used one week previously. To prevent accidents of this sort, the referee believes that multiple dose ampules should contain a bactericidal agent in sufficient concentration to prevent the multiplication of bacteria and ultimately to kill bacteria in the material.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING GENERAL DECISION.

RAYMOND HERTWIG, Secretary.

SPECIAL PURPOSE FOODS FOR DIETS RESTRICTED IN DEXTROSE FORMERS

Special Purpose Foods, such as special bread, cake and flour, for diets restricted in dextrose formers, to be eligible for acceptance, excepting in cases of special adaptability, shall contain dextrose formers in an amount not greater than 3.3 Gm. of dextrose per hundred cubic centimeters (computing the dextrose equivalence as the carbohydrate, plus 58 per cent of the protein, plus 10 per cent of the fat content of the food). The labels and advertising shall comply with the Committee Rule "Special Purpose Foods."

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

FISHER'S BISCUIT MIX

Manufacturer.—Fisher Flouring Mills Company, Seattle.

Description.—Biscuit mix requiring only addition of liquid for baking; contains bleached short patent flour, hydrogenated vegetable oil, salt, skim milk, sodium bicarbonate, sucrose, dextrose, calcium acid phosphate, calcium lactate and sodium acid pyrophosphate.

Manufacture.—The nonfat ingredients are thoroughly mixed; the shortening is "cut" into the flour by special mixing equipment. The product is packed in cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	10.7
Ash	4.1
Fat (ether extraction method)	14.0
Protein (N × 5.7)	7.6
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	63.3

Calories.— 4.1 per gram; 116 per ounce.

VELVO PASTEURIZED HOMOGENIZED MILK

Distributor.—Oakland Dairy, Pontiac, Mich.

Description.—Bottled, pasteurized, homogenized milk.

Preparation.—Milk obtained from producers under supervision of the Michigan State Department of Health and the City of Pontiac Department of Health is tested for milk fat, sediment and its reaction to methylene blue. Milk passing these tests is pasteurized by the holding method (63 C. for thirty minutes), cooled to 54 C., homogenized under 3,000 pounds pressure, cooled to 7 C. and automatically filled in bottles.

Analysis (submitted by distributor).—Standardized to contain not less than 3.6 per cent milk fat.

Calories.—0.7 per gram; 20 per ounce.

Claims of Distributor.—The cream does not separate.

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SATURDAY, SEPTEMBER 1, 1934

THE TREND OF INFECTIOUS DISEASES OF CHILDHOOD

The constant change in the frequency of disorders of the human body is well illustrated by the decreasing incidence of infectious diseases in civilized countries. Probably the most striking example, especially for those whose medical memories extend thirty years or more, is typhoid. At present the trends of other infectious diseases, such as diphtheria,[1] are of particular interest.

Useful recording and statistical interpretations of disease trends are those appearing in the Epidemiological Reports of the Health Section of the Secretariat of the League of Nations. In a recent issue [2] it was proposed to show that a decline has occurred in the deaths caused by whooping cough and measles similar if not equivalent to that in diphtheria and scarlet fever. Attention was also drawn to the relative social importance of these four infectious diseases of childhood, since "the traditional fear inspired by scarlet fever and diphtheria is no more justifiable than the indifference shown by public opinion and even perhaps by some health authorities as regards measles and whooping cough." In order to estimate the relative social significance of these diseases it is necessary to consider not only the death rates but also their morbidity, as shown both by the statistics of reported cases and by the results of inquiries to children and adolescents concerning the infectious diseases they have had.

Only in England and Wales are the statistics previous to 1900 sufficiently reliable to permit a study of mortality from these four diseases since 1856. These statistics bring out clearly the absolute and relative preponderance of scarlet fever until 1880. Up to that year scarlet fever caused nearly 40 per cent of the deaths attributed to the four diseases. Since 1916 scarlet fever has been responsible for less than 6 per cent, on the average, of the deaths from these diseases. The death rate fell gradually from 264.6 per hundred thousand in 1861-1865 to 5.5 in 1926-1930, a decline of nearly 98 per cent. Diphtheria also declined but began from a lower level and did not fall quite so low. Hence the proportion of the deaths due to diphtheria, which averaged about a fifth until 1890, has now risen to about a fourth of all the deaths from these four diseases. Whooping cough and measles, which also caused about a fifth each of the total deaths from these diseases at the middle of the last century, have slowly increased their respective proportions and are now each responsible for more than a third, in spite of the diminution in actual number of deaths they cause (68 and 82 per cent, respectively). Until 1880 the deaths from whooping cough had barely begun to decrease, but since then the decline has continued uninterruptedly. As regards measles, however, the mortality fluctuated unevenly until 1915 and it is only since that year that the decline has taken place. The courses followed by these four contagious diseases of childhood do not exactly synchronize, so that the decline in their mortality cannot be attributed to a single cause. The drop in the proportion of children in the general population cannot be put forward as a cause, since the rates are calculated on the infantile population (0-15 years).

In comparing the death rates from these four diseases in different countries, the essential common trait is a decrease for every disease in every country. In some countries, however, the initial death rate was higher than others at the beginning of the century and the decrease since that time still leaves them with a higher death rate than others. It seems, therefore, that the various countries are passing through different stages of an identical evolution.

As far as its mortality is concerned and in spite of the falling off during the last few decades, diphtheria remains one of the most serious of children's diseases. Whooping cough and measles also remain serious, and this would be more obvious were it not for the fact that a number of secondary cases of bronchopneumonia following these diseases are still classified under the heading "bronchopneumonia." These two diseases, and particularly measles, deserve more attention than the careless indifference too often shown them by the public.

When these studies are removed from the realm of pure statistics, certain facts are seen to take on an important significance. The decline in the mortality from scarlet fever and diphtheria is in general well recognized, that from the other two diseases not so well. The relatively large mortality from whooping cough and measles is certainly not grasped by the public and probably not by a considerable element of the medical profession. This situation should receive notice by health authorities and medical schools especially. In the latter a lag in teaching emphasis is to be expected, but such emphasis should not remain completely static. By way of example, many medical

1. Diphtheria Mortality in Large Cities of the United States in 1933: Eleventh Annual Report, J. A. M. A. **102:** 1758 (May 26) 1934.

2. Relative Importance of the Principal Infectious Diseases of Childhood: Epidemiological Report of the Health Section of the Secretariat, League of Nations, R. E. **173:** 109 (Nos. 5-6) 1931.

graduates, even recent ones, are conscious of a time and effort spent on typhoid entirely incommensurate with the present medical importance of that disease in most districts. Similarly it should now be obvious that greater efforts should be made in instruction on measles and whooping cough than is generally allowed.

CLIMATE AND HEALTH

The relation of "climate" to human health and disease has intrigued both physicians and the public, at least since the writing of the chapter "Of Airs, Waters and Places" in the works of Hippocrates. Until the microbic theory began to be seriously studied, in fact, almost every discussion of disease opened with the observed relationship of the condition to season, locality, temperature or other "climatic" factors. Thus, Sydenham[1] introduces one chapter by "The foregoing Winter being extremely cold, and the Frost continuing without any intermission till Spring, it thaw'd suddenly at the end of March, in the year 1665, and Inflammations of the Lungs, Pleurisies, Quinsies, and such like inflammatory Diseases, made great slaughter on a sudden, and at the same time a continual Epidemick Fever appear'd."

One of the difficulties in scientifically relating disease to climate is the somewhat vague definition of the term. Smith[2] in his recent presidential address before the British Medical Association defines "climate" as "indicating all the solar and terrestrial factors and influences which affect animal and vegetable life, including sunlight, atmospheric temperature, humidity and pressure, movement of air, and prevailing winds . . . and whilst including airs, also embracing waters and places." With a definition as broad as this it is entirely impossible to relate "climate" in any scientific sense with any bodily or mental modification.

The hours and intensity of sunlight can certainly be included as one of the important factors in "climate." Few could be found to disagree with Smith when he says that "whilst the sun is our greatest natural friend, he can, if regarded with disrespect or insolence, become an equally potent foe. . . . It is the duty of the profession to counsel that moderation is essential to the successful practice of any theory." In tuberculosis, at least, this thesis seems to be amply proved. Here again, however, it is virtually axiomatic that anything in excess of certain physiologic limits is harmful. Such redundance is of doubtful value.

It would seem time that the veil surrounding the somatic effects of climatic factors be lifted further. The most confusing feature of the problem has been the inclusion of essentially unrelated elements. Thus Smith states that "often a climate with frequent but moderate variations will prove beneficial, the more so if combined with a regular rhythm of rest, sleep, open-air exercise, and a properly supervised and dispensed diet; beautiful surroundings, changes of scene and of manner of life, all helping to encourage the invalid." If all these things help, what is the exact beneficial effect, might one well ask, of increased direct sunlight, higher temperature, lower humidity or increased wind velocity?

The outlook for improving the indications for a "change of climate" is not hopeless, however. Such change is not thought necessary for hookworm disease, not always for malaria, and there is a considerable body of opinion that thinks it is not necessary for the adequate treatment of pulmonary tuberculosis. Complete nihilism in this respect is also probably not justified. Any belief that has existed as long and persistently as the value or harm of a specific climate in all probability has some foundation in fact. Coburn's[3] work on the effect of Puerto Rican conditions on rheumatic fever is a good example of what may be done. It is not wholly immaterial that it is the infrequency of hemolytic streptococci rather than the temperature that has the favorable effect. The enthusiastic prospectus of this or that resort or spa should give way to a more exact knowledge of the benefits that should accrue to those who change their locality. The medical profession needs some foundation other than the financial status of the patient for advising for or against a change of climate. This amounts to a challenge.

THE STERILITY OF DRUGS IN AMPULES

About a year ago Gershenfeld,[1] of the Philadelphia College of Pharmacy and Science, called attention to the fact that solutions marketed in ampules, generally considered to be sterile, may occasionally be contaminated with pathogenic organisms. He reported two cases of suppuration that developed in patients following the injection of the contents of ampules, both from the same batch, although in each case the usual aseptic precautions were taken by the physician. Two ampules from this batch were then examined and each revealed the presence, in pure culture, of Staphylococcus aureus. From a brief survey then made by Gershenfeld, it appeared that many firms fail to indicate on the labels of ampule preparations whether or not these are sterile. The physician ordinarily makes the tacit assumption, when he administers to a patient the contents of a sealed container of this type, that adequate precautions have been taken by the manufacturer to assure the absence of viable micro-organisms. While in the majority of instances this belief is no doubt warranted, it appears that this is not universally the case. When an infection has occurred from a parenteral injection, it is usually impossible to determine whether this was

1. Sydenham, Thomas: Practice of Physick, ed. 8, London, J. Darby, 1722.

2. Smith, S. W.: Climate and Health, Brit. M. J. **2**: 153 (July 28) 1934.

3. Coburn, A. F.: The Factor of Infection in the Rheumatic State, Baltimore, Williams & Wilkins Company, 1931.

1. Gershenfeld, Louis: Control of the Traffic in and Labeling of Ampules and Medicaments for Parenteral Administration, Am. J. Pharmacy **105**: 155 (April) 1933.

due to the solution employed or to a slip in technic. For this reason evidence is not available either as to the approximate incidence of contamination or as to the occurrence of infections from the use of nonsterile products. The Food and Drugs Administration endeavors to keep as complete a check as possible on such of these preparations as come under its jurisdiction by reason of claims made on the labels, but an extensive survey undertaken by this agency after the appearance of Gershenfeld's article has not yet been completed.

The Council on Pharmacy and Chemistry recently undertook to study this problem, and its detailed report appears elsewhere in this issue (p. 677). A questionnaire was sent to all manufacturers having products of this type accepted for New and Nonofficial Remedies, requesting information as to methods employed for sterilizing and for testing for sterility. It appeared from the replies received that wide divergence exists among various firms in the methods used for sterilization of the contents of ampules and in subsequent testing for absence of contamination in the finished products. Practically all the biologic products that come under the supervision of the National Institute of Health appear to be adequately tested for sterility. In the case of chemical substances and solutions of the various types listed in the Council's report, the methods employed by most of the firms appear also in large part to be adequate. However, in a significant number of instances these do not appear to be such as to assure absence of bacterial contamination.

No standard method is employed by all firms, and the procedures variously used differ greatly in their effectiveness. In a few cases the final product is not tested at all and, in the case of some dry preparations to be dissolved before use, the substance may not even be sterilized. In the latter case, of course, contamination would not ordinarily be serious, yet it is conceivable that severe infection might result from the use of a solution made under otherwise aseptic precautions from such a powder. Multiple dose ampules sealed with rubber stoppers involve a special problem, as the solution, even if originally sterile, may become contaminated during withdrawal of a dose. It is the Council's opinion that such preparations should contain a potent bactericide in proper concentration.

The Council found in its investigation that a number of other agencies were interested in assuring the sterility of ampule preparations and were taking steps to establish standard methods to be employed by commercial organizations. These were the Committee on Revision of the Pharmacopeia of the United States, the National Formulary Committee, the American Drug Manufacturers' Association and the American Pharmaceutical Manufacturers' Association. Most of the recommendations made have been based on the regulations issued by the United States Public Health Service. It is anticipated that the problems involved will reach an early solution and that such procedures as are necessary to assure with reasonable certainty the sterility of preparations marketed for parenteral use will soon be extensively practiced.

Current Comment

THE DIONNE QUINTUPLETS

Elsewhere (p. 673) appears the account by Dr. A. R. Dafoe of the birth and successful rearing to two months' growth of quintuplets. The incident is notable —apparently the first of its kind to occur in the history of medicine. True, there have been previous records of quintuplets, perhaps as many as from thirty-two to thirty-five instances, but, as Dr. Dafoe points out, in no previous instance have quintuplets ever reached the age of two months. The incident, while extraordinary, is useful as well in pointing a moral. Callander, Ontario, as every one now knows, is far from being a metropolitan community. Its population is around 600 people and Dr. Dafoe is the only doctor there. Nevertheless, to him there came an extraordinary opportunity. With the traditions of medicine and an excellent sense of the ethical requirements of the situation, he met the occasion. As evidence, one needs only to read his account of the incident in the phraseology with which it was sent to THE JOURNAL. His conduct of the case and his relations to the public in connection with it have been exemplary. As one gazes on the picture of the midwife and reads the record of the conditions under which these children were born and developed, one realizes to some extent also how futile is much of the superscientific and pseudoscientific discussion that has been published in recent years on the problems of maternal mortality and infant care. There are many lessons for scientific medicine in this incident.

HANDWRITING OF CRIMINALS

In a recent report, Quinan [1] has described the results of efforts to differentiate the handwriting movements of convicted murderers from those of convicted forgers. One hundred each of murderers, forgers and unselected noncriminals were examined. In addition, six abattoir "killers" were studied. The same model sentence was written by all the subjects, and the time required, the angular inclination of the letters, the total running length along the base line and the configuration of the letters were recorded. It appears that bradygraphia is characteristic of murderers, for this group required 101 seconds to complete the model sentence, whereas the times for forgers and noncriminals were 68 and 49 seconds respectively. The running length was somewhat greater for the forgers than for the other groups. The total angularity of the letters was noted. The coarse, sprawling letters instead of smooth and rounded loops were evidently made by jerky movements of the pen. The numbers of angles were 469, 286 and 283 for the murderers, forgers and noncriminal groups

1. Quinan, Clarence: Handwriting of Criminals, Arch. Neurol. & Psychiat. **32**: 350 (Aug.) 1934.

respectively. The "spastic-ataxic" writing of the murderers was also characteristic of the six abattoir "killers." The writing of the forgers, in addition to being full and rounded in configuration, frequently showed eccentricities in the manner of crossing the t's as well as certain flourishes on terminal letters. Although without doubt many factors influence the character of a person's handwriting, it is of considerable interest that in these antisocial groups a correlation can be established between handwriting and the particular misdemeanor involved.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a Western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, Central daylight saving time. The next three broadcasts will be as follows:

September 6. Football Hazards, Morris Fishbein, M.D.
September 13. Common Eye Troubles, William C. Benedict, M.D., representing the meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago.
September 20. Infantile Paralysis, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Society News.—At a meeting of the Tri-County Medical Society in Prescott, June 28, the speakers were Drs. George V. Lewis on "Infections of the Hand"; Grady W. Reagan, "Treatment of Acute Complications of Gonorrhea," and Clyde D. Rodgers, "Care During Pregnancy." The speakers were from Little Rock.——Dr. Walter G. Eberle, Fort Smith, addressed the Crawford County Medical Society, June 26, on "Fertilization of the Human Female."——The Washington and Benton county medical societies held their annual picnic session at Cave Springs, July 12; speakers were Drs. Sidney J. Wolfermann, Fort Smith, on "Significance of Jaundice," and Jesse D. Riley, State Sanatorium, "Pulmonary Tuberculosis." Dr. Harvey D. Wood, Fayetteville, the only living charter member of the Washington County society, spoke in recognition of that society's sixty-second anniversary.

CALIFORNIA

Personal.—The following promotions at the University of California School of Medicine, San Francisco, among others, have been announced: Dr. Edward L. Munson, to professor of preventive medicine; Dr. Edward B. Shaw, to associate clinical professor of pediatrics, and Dr. Keene O. Haldeman, to assistant clinical professor of orthopedic surgery.

More of the Eyesight Swindlers.—Warrants for the arrest of three persons posing as eye specialists have been taken out in California. The swindlers recently appeared in Long Beach, where they approached a Mr. J. O. Miller with practically the same story that has been frequently detailed in THE JOURNAL. A representative called on Mr. Miller, whose name had been obtained from the local optometrist. He examined his eyes, located what he called a cancerous growth, and called in a famous surgeon, who "happened" to be with the representative and who for $200 performed an operation. Later the representative returned with the story that the surgeon had been killed in an accident, but before his death had turned all his patients over to another physician who was ready to make the examination and prescribe the necessary treatment. Following the examination, it was decided that twenty-one treatments in a clinic in San Francisco were necessary, the cost to be $500. When the victim said he could not make the trip and admitted having only $300, the surgeon stated that a cure could be effected by using a belt for which Miller must put up a bond of $500. Credit for the $200 paid for the first operation was allowed, and the $300 was accepted for the remainder of the bond. A few days later a man posing as an express agent told Miller that there was a delay in the delivery of the belt but that the money would be returned as soon as he returned the belt. Miller heard no more of the swindlers. The names used in this instance are Miles, Howard and Evans. The name Miles is used also in the Kentucky news item, March 17, page 849, and Oregon, August 11, page 419.

COLORADO

Tuberculosis Conference.—Announcement is made of the tentative program of the Rocky Mountain Tuberculosis Conference at the Antlers Hotel in Colorado Springs, September 17-19. The following physicians will participate, among others:

Charles W. Mills, Tucson, Ariz., A Simple Method of Procedure in the Diagnosis of Pulmonary Tuberculosis.
Robert B. Homan, El Paso, X-Rays in the Diagnosis of Pulmonary Tuberculosis.
Clinton E. Harris, Woodmen, Differential Diagnosis of Intrathoracic Tumors and Pulmonary Tuberculosis.
Lewis J. Moorman, Oklahoma City, Congenital Cystic Diseases of the Lung.
Philipp Schonwald, Seattle, A Modification of the Blood Sedimentation Test in Pulmonary Tuberculosis.
Carl H. Gellenthien, Valmora, N. M., Temperature and Pulse Rate in Pulmonary Tuberculosis.
Earle G. Brown, Topeka, Kan., Progress in Tuberculosis Control in Kansas.
Robert O. Brown, Santa Fe, The New Mexico State-Wide Health Survey.
Henry Sewall, Denver, Artificial Pneumothorax in Pulmonary Tuberculosis.
Jay Arthur Myers, Minneapolis, General Considerations in the Diagnosis of Childhood Tuberculosis.
Leon G. Woodford, Everett, Wash., Artificial Pneumothorax and Phrenicectomy.
James H. Forsee, Denver, Closed Intrapleural Pneumolysis.
Stirley C. Davis and Charles A. Thomas, Tucson, Thoracoplasty.

At the banquet Tuesday evening, Dr. Kendall Emerson, New York, managing director, National Tuberculosis Association, will discuss "The Future in Tuberculosis Control," and Dr. James J. Waring, Denver, "The Murphy-Forlanini Controversy."

FLORIDA

Campaign Against Mosquitoes.—The state health department is directing special campaign measures throughout Florida to prevent the spread of dengue fever, 800 cases of which were reported in a recent outbreak in Miami. In West Palm Beach, a feature of the campaign was a house to house canvass by F E R A workers to detect mosquito breeding places.

Society News.—At a meeting of the Dade County Medical Society in Miami, August 3, speakers were Drs. Charles D. Cleghorn and John W. Snyder, both of Miami, on "Skin Tumors" and "Gritti-Stokes Amputation for Gangrene of the Leg," respectively.——Speakers before the Leon-Gadsden-Liberty-Wakulla-Jefferson Counties Medical Society in Tallahassee, July 19, included Drs. Robert F. Godard, Quincy, on "Causalgia" and Laurie L. Dozier, Tallahassee, "Prevention of Puerperal Infection."

GEORGIA

University News.—Dr. Newdigate M. Owensby, Atlanta, has been appointed professor of psychiatry at the University of Georgia Medical Department, Augusta, and Dr. James R. Garner, Atlanta, has been designated visiting professor of forensic medicine.

Society News.—Speakers before the First District Medical Society, July 25, in Savannah, included Drs. Joseph Sumter Rhame, Charleston, S. C., on "Gastric Cancer"; James E. Paullin, Atlanta, "Diagnosis and Treatment of Rheumatoid Arthritis"; John W. Daniel, Savannah, "Treatment of Peptic Ulcers with High Protein Diet"; Clinton R. Riner, Savannah, "Acute Osteomyelitis of the Pelvic Bone," and Dr. Clarence L. Ayers, Toccoa, "The Unusual Necessity for Medical Organization of the Present Time."——At a meeting of the Fulton County Medical Society, August 16, Dr. Edwin S. Byrd gave a clinical talk on pernicious anemia and Drs. Calvin B. Stewart and John F. Denton presented a paper on carcinoma of the cervix uteri.

ILLINOIS

Health Program for the Colored Population.—A canvass of prevailing health conditions among preschool children is the first step in a health program among the colored population of the state to be conducted by the state department of health. During the first week in September a series of conferences will be held to conduct physical examinations of preschool children, the records of which will be used to draw up a practicable program to improve health conditions among the colored population, which is concentrated principally in St. Clair County.

Epidemic Encephalitis Increases.—With sixty-five cases of epidemic encephalitis reported since August 1, the state health department announces a pronounced upward trend in the prevalence of the disease. Thirty-seven new cases were reported during the week ended August 25. Six cases occurred in Danville while Canton, Fulton County, and Bartonville, Peoria County, each reported three cases. There were five cases in Paris in Edgar County, where an epidemic occurred in 1932. The department reports that the majority of new cases are among elderly people.

KANSAS

Personal.—Dr. Clarence R. Hepler, Wichita, has resigned as health officer of Sedgwick County, effective July 1, to accept a position at the state hospital at Larned, it is reported. Dr. J. Carroll Montgomery, Topeka, has been appointed to succeed him.—Dr. Herschel L. Hendricks, Iola, has been appointed health officer of Allen County, succeeding Dr. Adelbert R. Chambers.

Brinkley Fails Again.—John R. Brinkley of Milford, "goat gland specialist" who sought nomination as a candidate for governor, was defeated in the recent primary, polling less than 70,000 votes out of a total of 300,000. Two years ago Brinkley received 244,607 votes as an independent candidate, according to *News-Week*.

MAINE

Dr. Hill Honored.—Dr. J. Frederick Hill, Waterville, was presented with a silver cocktail service at a celebration on his eightieth birthday, June 15. Among those present were Gov. Louis J. Brann, Dr. Edwin W. Gehring, president, Maine Medical Association, and the mayor of Waterville, L. Eugene Thayer.

Clinical Meeting.—The second clinical meeting of the Maine Medical Association will be held in Portland, October 4-5. Clinical demonstrations in medicine and surgery will be held in the various hospitals. No formal papers will be presented. The Cumberland County Medical Society will entertain with a dinner Thursday evening, October 4. The first clinical meeting was held in Bangor, February 20-21, when the staff of the Eastern Maine General Hospital presented the program.

MARYLAND

Outbreak of Typhoid.—Twenty-eight cases of typhoid were traced to a benefit supper in Baltimore recently. Although the manner in which the supper served as a means of disseminating the disease has not been ascertained, according to Baltimore *Health News*, it has been learned that one person closely connected with the management of the affair was suffering from an apparently unrecognized ambulatory form of typhoid.

MICHIGAN

Personal.—Dr. Francis A. Hargrave, Palo, recently celebrated the fiftieth anniversary of his entrance into medical practice.——Dr. John E. Gordon, epidemiologist of the Detroit Department of Health, will leave the department October 1 to join the staff of the Rockefeller Foundation in New York. ——The American Legion, Charles A. Learned Post, number 1, honored the memory of Dr. Max Ballin, Detroit, through the adoption of a resolution eulogizing him as a physician and a soldier. Dr. Ballin died in March.——Dr. John L. Burkhart, who has practiced medicine in Big Rapids for fifty years, was guest of honor at a banquet, July 17, attended by more than 200 persons, including Governor Comstock.

MINNESOTA

Illegal Practitioner Sentenced.—Mrs. Letha Beach, alias Letha Byers, pleaded guilty to practicing healing without a basic science certificate when arraigned in district court, August 3, at Fergus Falls. Investigation by the state board of medical examiners disclosed that the woman had represented herself as a physician from Nebraska and had sold herb medicines to two persons in Henning, collecting $19 from two patients. It was said also that she represented herself as being connected with the medical profession in that vicinity but admitted when arrested that this was not true. It was further brought out that she had practiced the same type of "healing" in Redwood County in 1928. Judge Anton Thompson sentenced the woman to one year in the jail of Otter Tail County and placed her on probation until December 1935. She is to return the money to the persons at Henning and is to refrain from practicing healing in any form in the state.

Northern Minnesota Meeting.—The annual session of the Northern Minnesota Medical Association will be held at the Elks Hotel in Brainerd, September 10-11. The scientific program is as follows:

Dr. Herbert H. Leibold, Parkers Prairie, Fractures, Diagnosis and Treatment in Rural Practice.
Dr. Ernest M. Hammes, St. Paul, Cerebral Arteriosclerosis.
Dr. Joseph C. Michael, Minneapolis, Recent Therapeutic Advances in Neurology.
Dr. Samuel H. Boyer Jr., Duluth, Idiopathic Hypochromic Anemia.
Dr. James B. Carey, Minneapolis, Diagnosis and Management of Anemia.
Dr. Morris H. Nathanson, Minneapolis, Treatment of Cardiac Emergencies.
Dr. Robert L. Nelson, Duluth, Report on Meeting of the American Heart Association.
Dr. Edgar T. Herrmann, St. Paul, Present Status of Dinitrophenol.
Dr. Berton J. Branton, Willmar, Cost of Liability Insurance.
Dr. William H. Hengstler, St. Paul, Malpractice.
Dr. William T. Peyton, Minneapolis, Malignant Tumors Arising from Epithelioma of the Pharynx.
Dr. Chauncey A. McKinlay, Minneapolis, Treatment of Infertility Associated with Hypometabolism.
Dr. Lloyd F. Hawkinson, Brainerd, Endocrine Growth and Sex Deficiency.
Dr. Edward N. Peterson, Eveleth, Osteitis Fibrosa Cystica.
Dr. Norman P. Johnson, Minneapolis, Nonorganic Causes of Fatigue.
Dr. Edward H. Rynearson, Rochester, Diagnosis and Treatment of Various Types of Goiter.
Dr. Gershom J. Thompson, Rochester, Prevention of Complications of Prostatic Resection.
Dr. Olaf J. Hagen, Moorhead, The Jaundiced Patient.
Dr. Edward Bratrud, Thief River Falls, Urography with Special Reference to the Differential Diagnosis of Kidney Conditions.
Dr. Frank J. Hirschboeck, Duluth, Medical Emergencies in the Chest.

A banquet will be held at the Ransford Hotel, Monday evening, with Richard E. Scammon, Sc.D., Minneapolis, as toastmaster. An address on "Minnesota Man" will be delivered by Albert E. Jenks, Sc.D., professor of anthropology, University of Minnesota. Dr. Axcel C. Baker, Fergus Falls, will give his presidential address on this occasion, and Dr. Francis J. Savage, St. Paul, president of the state medical association, will speak.

MISSOURI

Personal.—Dr. Hyman I. Spector, tuberculosis controller, has been appointed assistant health commissioner of St. Louis to succeed Dr. Paul J. Zentay, resigned, and Dr. Harold D. Chope, city epidemiologist, has resigned to accept an appointment as assistant director of the California State Department of Health.

NEW YORK

Quarantine Rules Modified.—Regulations in the sanitary code dealing with quarantine in cases of poliomyelitis, meningococcic meningitis, scarlet fever and diphtheria were amended at a recent meeting of the public health council. Under the new provisions, adults in a household in which there is a case of poliomyelitis or meningitis need not be quarantined. Adults in contact with cases of diphtheria or scarlet fever may continue to follow any vocation that does not involve handling of food or close association with children if the sick persons are properly isolated at home. Children in such households must be quarantined until the patient is released. The isolation period for scarlet fever was also reduced from thirty days to twenty-one days by the new regulations.

New York City

Report of Tuberculosis Committee.—Expansion of the city's facilities to the point at which 7,500 patients with tuberculosis can be cared for at one time was recommended by a special committee appointed by Dr. Sigismund S. Goldwater, commissioner of hospitals, several months ago to study the situation. This would mean 2,500 additional beds. There should be a central institution in each borough, the committee averred, for persons requiring relatively short periods of hospitalization, and three country institutions comprising about 1,400 beds for convalescents. The latter should be operated by the state and paid by the city for care of its patients, the committee believed. The Municipal Sanatorium at Otisville should be turned over to the state, the report declared. It was also suggested that the health and hospital departments each appoint a "chief of

tuberculosis" to coordinate the work of the two departments in this field. Until an adequate number of beds is provided, the committee recommended that patients be admitted to hospitals not by priority but by consideration of their condition; that is, those most likely to endanger the health of the community and those most in need of care should be admitted first. The hospital admission bureau should be under the sole jurisdiction of the hospital department, which now controls it jointly with the health department, the report stated. If necessary to achieve integrated service, health department clinics should be turned over to the hospital department, except those conducted by the health department to find new cases. Dr. Haven Emerson was chairman of this committee and members were Drs. Foster Murray and James Burns Amberson Jr., Mr. Henry C. Wright and Mr. Godias J. Drolet.

OHIO

Promotions at Western Reserve.—Announcement is made by Western Reserve University School of Medicine of the following promotions to associate professorships: Dr. Norman C. Wetzel in pediatrics; Dr. Emerson Megrail, hygiene and bacteriology; Samuel W. Chase, Ph.D., histology and embryology, and O. W. Barlow, Ph.D., pharmacology. The following were promoted to assistant professorships: Dr. Herbert S. Reichle, pathology; Ramon F. Hanzal, Ph.D., pathologic chemistry; Franklin C. Bing, Ph.D., biochemistry; Donald E. Gregg, Ph.D., physiology.

OREGON

Personal.—Dr. James M. O'Dell, Salem, has been appointed superintendent of the Eastern Oregon State Tuberculosis Hospital at The Dalles, succeeding Dr. Dewalt Payne, it is reported.——Major Aldine E. Morgan, chief medical officer at the Veterans' Administration Home at Danville, Ill., for several years, has been transferred to the home at Roseville, it is reported.

Society News.—Dr. Max Cutler, Chicago, addressed the Multnomah County Medical Society, Portland, June 30, on recent advances in radiation treatment of cancer.——Speakers at the annual meeting of the Eastern Oregon Medical Society at Pendleton, June 30, included Drs. James Tate Mason, Seattle, on "Carcinoma of the Colon"; Grover C. Bellinger, Salem, "Early Diagnosis of Tuberculosis," and Louis P. Gambee, Portland, "Management of General Peritonitis."

PENNSYLVANIA

Fifty Years in Practice.—Twelve physicians received certificates of honor in recognition of fifty years or more in the practice of medicine at the annual meeting of the Ninth Councilor District of the Medical Society of Pennsylvania at the Polk State School, July 27. An award was made posthumously to the late Dr. Jacob P. Strayer, Oil City, who died recently, and presented to his daughter. Those who received certificates were Drs. William W. Leech and Thomas James Henry, Apollo; Joseph D. Orr, Leechburg; John Thomas Deemar, Kittanning; Edwin N. B. Mershon, Saxonburg; John T. Rimer, Clarion; John F. Summerville, Monroe; David Lewis McAninch, Lamartine; William F. Beyer and Sylvester S. Hamilton, Punxsutawney; Calvin M. Wilson, Franklin, and Spencer M. Free, Dubois.

Philadelphia

Camp for Diabetic Children.—The Philadelphia Metabolic Association has established a free camp for children between the ages of 5 and 16 at Blue Grass Lodge, Bustleton. Thirty-two children were to be accommodated from August 27 to September 8. The Children's Country Week Association provides the camp and food, and the association arranges personnel and other details. The new association is made up of physicians, nurses, social workers, dietitians and interested laymen who wish to improve treatment, standardize records, organize diabetic departments in hospitals, disseminate knowledge about the disease and protect the patient from inadequate treatment, nostrums and expensive and worthless food substitutes.

RHODE ISLAND

Personal.—Dr. William O. Rice has been appointed superintendent of Rhode Island Hospital to succeed Dr. John M. Peters, who retired January 1. Dr. Rice, who has been acting superintendent in the interim, had served as assistant superintendent since 1910.——Dr. Virgil H. Danford has recently been promoted to the superintendency of Rhode Island State Sanatorium, Wallum Lake.

SOUTH CAROLINA

Society News.—Drs. Thomas A. Pitts and Nathaniel B. Heyward, Columbia, among others, addressed the Second District Medical Society, Batesburg, July 31, on "Factors Influencing Gastric Function" and "Gallbladder Complications of Typhoid," respectively.——Dr. Hal M. Davison, Atlanta, addressed the Spartanburg Medical Society, July 30, on hyperpyrexia.——Dr. Edward A. Looper, Baltimore, addressed the Columbia Medical Society, June 11, on diagnosis and treatment of diseases of the larynx, trachea and bronchi.

TENNESSEE

Personal.—Dr. William H. McMillan, Erin, was the guest of honor recently at a dinner celebrating his seventy-fifth birthday.——Dr. Russell B. Howard, Murfreesboro, has been appointed health officer of Carter County.

Health at Memphis.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million for the week ended August 18 indicate that the highest mortality rate (20) appeared for Memphis and the rate for the group of cities as a whole, 9.9. The mortality rate for Memphis for the corresponding week of 1933 was 14.6 and for the group of cities, 9. The annual rate for eighty-six cities for the thirty-three weeks of 1934 was 11.7, as against a rate of 11.1 for the corresponding period of 1933. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

WASHINGTON

Personal.—Dr. Harry H. Dutton has been appointed superintendent of Northern State Hospital, Sedro Woolley, succeeding Dr. Edward C. Ruge.——Dr. Albert S. McCown, Seattle, has been appointed in charge of the child welfare department of the state board of health.

State Medical Meeting at Spokane.—The Washington State Medical Association will hold its annual session at Spokane, September 10-12, at the Davenport Hotel. The first day will be devoted to the annual golf tournament and the second and third to the scientific and business sessions. The scientific program is as follows:

Dr. William D. Stroud, Philadelphia, Coronary Disease; Digitalis in the Treatment of Cardiovascular Disease.
Dr. Verne C. Hunt, Los Angeles, Operability of Carcinoma of the Breast; Applicability of Certain Surgical Procedures for Duodenal and Gastric Ulcer.
Dr. Fred W. Bailey, St. Louis, Reduction of Mortality in Appendicitis.
Dr. Brien T. King, Seattle, Etiology of Heart Disease.
Dr. Eugene W. Rockey, Portland, Low Back Pain: Differential Diagnosis and Treatment.
Dr. Paul G. Flothow, Seattle, Treatment of Severe Constipation by Physiologic Surgical Relief.
Dr. Roger Anderson, Seattle, Fractures of the Patella Treated by an Ambulatory Method.
Dr. Sam L. Caldbick, Everett, Retrocecal Appendicitis and Complications.
Dr. Oscar S. Proctor, Seattle, Surgical Treatment of Pulmonary Tuberculosis.
Dr. Homer J. Davidson, Seattle, The Economic Problem of the Physicians of Washington.
Dr. Charles B. Ward, Seattle, Treatment of Malignancies of the Head and Neck.
Dr. Joseph Lynch, Spokane, Diagnosis of Brain Tumor.

A public meeting will be held Monday evening, September 10, with the following program:

Dr. J. Tate Mason, Seattle, Hospitals and the Public.
Dr. Donald V. Trueblood, Seattle, What the Public Should Know About Cancer.
Dr. Stroud, What the Community Should Know About Heart Disease.
Dr. Hunt, Scientific Medicine in Relation to Society.
Dr. Bailey, What You Can Do to Help Your Doctor in Treatment of Appendicitis.

WISCONSIN

Personal.—Edwin B. Fred, Ph.D., professor of agricultural bacteriology at the University of Wisconsin, has been appointed dean of the graduate school, succeeding Charles S. Schlichter, Sc.D., who retired.

Society News.—Dr. T. J. O'Leary, Superior, addressed the Barron-Washburn-Sawyer-Burnett Counties Medical Society, June 10, at Rice Lake, on acute diseases of the gallbladder.——Drs. Nelson M. Percy and David S. Beilin, Chicago, addressed the Rock County Medical Society, Beloit, June 26, on "Surgery of Gastric and Duodenal Ulcers and Cancer of the Stomach" and "Analysis of 1,000 Consecutive X-Ray Examinations of the Stomach from the Clinical and Roentgenologic Viewpoints," respectively.——Jacob M. Essenberg, Ph.D., Chicago, made an address on "Embryology of the Ner-

vous System" before the Milwaukee Neuro-Psychiatric Society, June 28. —— Members of the Trempealeau-Jackson-Buffalo Counties Medical Society spent July 27 cruising on the Mississippi aboard Dr. William J. Mayo's yacht, the *North Star*. Sixty-three persons were in the party.

GENERAL

Interchamber Health Contest.—Announcement is made of the sixth interchamber city health conservation contest by the U. S. Chamber of Commerce, Washington, D. C., in cooperation with the American Public Health Association. The purpose of this year's contest is to interest the business man in public health and assist in the intelligent fostering and promotion of sound public health practices. The fact finding schedules on which the contest is based should be returned to Washington before March 1, 1935.

Society News. — The Pacific Coast Oto-Ophthalmological Society at its annual meeting in Butte, Mont., July 17, elected the following officers: Drs. Frank B. Kistner, Portland, president; Spencer S. Howe, Bellingham, Wash., and Casper W. Pond, Pocatello, Idaho, vice presidents, and Frederick C. Cordes, San Francisco, secretary. The 1935 meeting will be held in Portland.——Dr. Charles T. Sweeney, Medford, Ore., was chosen president-elect of the Pacific Northwest Medical Association at the recent annual meeting in Salt Lake City. Dr. George A. Dowling, Seattle, became president and Dr. Frederick Epplen, Seattle, was elected secretary-treasurer. ——Dr. Edward Jackson, Denver, was elected president of the Western Ophthalmological Society at the meeting in Butte, Mont., in July; Dr. Will Otto Bell, Seattle, vice president, and Dr. Andrew J. Browning, Portland, secretary. The next meeting will be held in Portland.

Railway Surgeons' Meeting.—The American Association of Railway Surgeons held its annual meeting at the Hotel Stevens, in Chicago, August 20-22, under the presidency of Dr. Sterling B. Taylor, Columbus. Among the speakers were:

Dr. Harvey Bartle, Philadelphia, Syphilis—A Problem in Hazardous Industry.
Dr. James A. Jackson Jr., Madison, Wis., Open Reduction Treatment of Fractures.
Dr. Ralph C. Hamill, Chicago, Mental Influences in Traumatic Situations.
Dr. Ralph B. Bettmann, Chicago, Penetrating Wounds of the Chest.
Dr. Géza De Takáts, Chicago, Determination of the Proper Level of Amputation.
Dr. Otto Jason Dixon, Kansas City, Repair and Restoration of Injured Blood Vessels with Viable Muscle.

Dr. John Garfield Frost, Chicago, was elected president of the association; Drs. William A. McMillan, Charleston, W. Va., Charles C. Stillman, Morganville, Kan., and Michael J. Owens, Kansas City, Mo., were elected vice presidents; Dr. Louis J. Mitchell, Chicago, was reelected secretary.

Meeting of Obstetricians, Gynecologists and Abdominal Surgeons.—The forty-seventh annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons will be held in White Sulphur Springs, W. Va., September 6-8, under the presidency of Dr. William Wayne Babcock, Philadelphia. Among the speakers will be:

Dr. Frederick S. Wetherell, Syracuse, N. Y., Intractable Dysmenorrhea—Relief by Sympathetic Neurectomy.
Dr. Lawrence M. Randall, Rochester, Minn., A Standard Test for Measuring the Variability of Blood Pressure.
Dr. Frederick H. Falls, Chicago, A Critical Study of 500 Cases of Eclamptogenic Toxemia.
Dr. Willard R. Cooke, Galveston, Solid Tumors of Mesonephric Origin.
Dr. Thomas E. Jones, Cleveland, Ohio, Recognition and Treatment of Late Bladder, Rectal and Intestinal Complications Following Radiation Treatment of Cancer of the Cervix.
Dr. Arthur Stein, New York, The Use of Small Dosages of Pituitary Extract in Obstetrics. A Review of the Last Twenty-Two Years.
Dr. Edgar A. Vanderveer, Albany, N. Y, Nonparasitic Single Retention Cysts of the Liver.
Dr. Howard F. Kane, Washington, D. C., The Use of Paraldehyde in Obtaining Obstetrical Analgesia and Amnesia.

The Joseph Price Oration will be delivered Thursday evening, September 6, by Prof. Erwin Zweifel, University of Munich, Germany, on "Diagnosis of Carcinoma of the Uterus in Its Earliest Stages."

CANAL ZONE

Society News.—At a meeting of the Medical Association of the Isthmian Canal Zone, Panama City, July 17, speakers were Drs. Elbert DeCoursey, "The First Fatal Case of Chagas' Disease on the Isthmus of Panama"; Joseph R. Darnell, "Nephrosis"; Lawrence Getz, "Tuberculosis of the Wrist Joint," and Orville G. Brown, "Discharges for Disability: The Panama Canal Zone." All are from Ancon.

PHILIPPINE ISLANDS

Restaurants Padlocked. — Twenty establishments for the preparation or serving of food in Manila were closed during the week preceding July 21 as a result of about twenty-five cases of food poisoning with five deaths, the New York *Times* recently reported. Almost all those padlocked are owned by Chinese and serve comparatively cheap food. Sanitation and refrigeration in such places are usually ignored. Although the sanitary code requires inspection, the inspectors are not well paid and are lax in their duties. The correspondent pointed out that such conditions do not exist in Manila's larger restaurants and hotels, which are models of cleanliness.

PUERTO RICO

Influenza Epidemic.—More than 7,000 cases of influenza have been reported in Puerto Rico, according to the Chicago *Tribune*, August 21. A conference of all public health physicians had been called to deal with the epidemic.

LATIN AMERICA

Radium Center in Colombia. — The National Radium Institute, with 3 Gm. of radium, was opened in Colombia, August 4, with ceremonies at which President Enrique Olaya Herrera officiated.——The third Pan-American Anti-Tuberculosis Conference will be held in Montevideo, Uruguay, in November.

Poliomyelitis in Cuba.—The New York *Times* reported, August 17, that Dr. Edward C. Rosenow, Rochester, Minn., had gone to Havana at the invitation of the Cuban government to assist in fighting an outbreak of poliomyelitis. It was said that seventy-three children had died in the last six weeks. ——A dispatch to the New York *Times* from Lima, Peru, states that 400 children in southern Peru have died of measles and convulsive coughs since May and that 3,000 or more children are still suffering from the epidemic.

FOREIGN

Clinic Staffed by Blind Technicians. — The National Institute for the Blind, London, has opened a clinic for massage and electrical treatments to be given by blind persons who have qualified as chartered masseurs in the institute's school for blind masseurs. All treatments will be given under strict medical supervision. The clinic was equipped by Mr. William Eichholz as a memorial to his cousin Dr. Alfred Eichholz, who died Feb. 6, 1933. Dr. Eichholz was formerly chief medical inspector for the board of education and at the time of his death was a councilor for the institute for the blind. The Prince of Wales officially opened the clinic, July 6, and Lord Moynihan made an address.

Deaths in Other Countries

Dr. Alfonso Poggi, professor of pathology in the University of Bologna, Italy, for many years, died July 22, according to the New York *Herald Tribune*.——**Dr. Auguste Marie,** French psychiatrist, died in Paris, July 29, aged 69, according to press reports.

Government Services

Evaluation of Serologic Tests for Syphilis

The U. S. Public Health Service announces that a comparative test of the relative value of serologic procedures for the diagnosis of syphilis is to be made within a few months. In cooperation with the American Society of Clinical Pathologists, the Public Health Service will collect specimens of blood from at least 1,000 persons and distribute comparable specimens to the laboratories of serologists who have described an original modification of a complement fixation or precipitation test for the diagnosis of syphilis. After all laboratory reports have been submitted by participating serologists, a committee of five members consisting of two specialists in clinical syphilology, two members of the American Society of Clinical Pathologists and one officer of the U. S. Public Health Service will interpret the results on the basis of clinical observations. Collection of specimens will begin about December 1 and a number of serologists will be asked to participate. Any serologist desiring to participate will be extended an invitation on presentation of suitable proof as to the originality of his modification of a serologic test. A brief description of the plan will be sent to workers who may be interested. Correspondence should be addressed to the Surgeon General, U. S. Public Health Service, Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 4, 1934.

Accidents in Industry

In his annual report, the chief inspector of factories and workshops states that he has been impressed by the number of avoidable accidents. The contempt for machinery, which is responsible for a wholly unnecessary toll of death and disablement, is almost incredible, since its dangerous character has been continuously emphasized from the start of factory inspection. An enormous field is open for education of the kind undertaken by the National Safety First Association, so that those exposed to the risk can be brought to realize that all power driven machinery is dangerous. Remarkable results have been obtained by establishing safety organizations in individual factories. On the other hand, in an industrial disease the symptoms may not be immediately apparent and the cause may long remain unsuspected. Thus the existence of asbestosis was for years unrecognized. During the last year several problems have arisen. Investigation of the incidence of silicosis among sand blasters has shown that sandblasting is an extremely dangerous occupation. Fortunately the remedy is at hand in the use of other abrasives.

DEATHS DUE TO DIETHYLENE DIOXIDE

A series of deaths due to inhalation of the vapor of diethylene dioxide (dioxan) at an artificial silk works led to an inquiry into the extent to which this substance is in use. The result was negative, but a question of wide importance was raised. There is at present no clear relation between toxicity and chemical constitution, and having regard to the use of new organic compounds as solvents, it would seem to be a valuable safeguard for each to be physiologically tested before being placed on the market for general use. Steps have been taken to have this done.

STATISTICS OF ACCIDENTS

At the end of 1933 there were 160,185 factories and 86,851 workshops under inspection—an increase of 2,294 factories and a decrease of 4,008 workshops compared with the preceding year. The number of accidents showed an increase from 106,164 to 113,260 and of fatal accidents from 602 to 688. Two reasons for the increase are given: One is an increase in the number of workers employed. The other is the return to work after long periods of unemployment. Many of the workers are suffering from lack of nourishment and are physically and mentally less alert and more liable to mishap than in normal times.

THE EFFECT OF INDUSTRIAL WORK ON FEMALES

There are 1,835,500 women and girls employed in factories, of whom 1,391,400 are over the age of 18. Textile industries employ the largest number (657,600), the manufacture of wearing apparel 313,000, and the food industries 140,700. Women and girls are frequently employed in repetition processes and in operating and tending the lighter machines. The inspector, Dr. Sibyl Horner, says: "Such employment illustrates one of the greatest attributes of the feminine sex—adaptability. This is the solution of the riddle which has provoked so much interest in scientific minds—Why is it that women alone of the industrial groups can bring themselves to the daily performance of monotonous work without losing what one may call for want of a better name 'interest in life.' They do it by a nice balance between attention and detachment—which is in effect a prescription for the prevention of boredom. Boys are not so good at maintaining this nicety of balance, and why should they when their outlook is so different from those of women or even from girls of the same age." As to the effect on the health of industrial employment of women and girls, Dr. Horner says that on the beneficial side are the stimulating effects of discipline and interests of factory life, with the higher standard of living of wage earners. Conditions in factories are in many cases better than those in the worker's environment. The food in the canteens is good and varied. Health risks are eliminated or reduced to a minimum and women are excluded by law from certain industries presenting definite health hazards. On the other hand, there are adverse effects. They age quickly. Physical attraction is early attained and quickly lost. The reason given by Dr. Horner is that women's work often begins when it nominally ends. The house and dependents make their claim on the woman worker. Her work is never done. But the net result is "good and getting better."

Intellectual Refugees from the German Persecution

Meetings of experts dealing with the intellectual refugees from the German persecution have been held in London. More than 1,300 scholars have been displaced, of whom more than 600 have emigrated or are likely to leave Germany in the next few months. In addition, between 5,200 and 5,500 professional people have had to emigrate because they lost their positions, while 7,000 students had to leave the universities and other institutions before completing their studies. The committee that met this week forms part of the organization set up by Mr. J. G. McDonald, the high commissioner for refugees from Germany. Dr. A. E. Cohn of the Rockefeller Institute, New York, presided at the meetings, and representatives were present of most of the academic and professional committees set up in the various countries to help in the settlement of the refugees. The salient outcome of the meetings is that, provided sufficient funds are forthcoming, most of the displaced scholars and most of the students can be taken care of and permanent places found for them, while given a coordinate effort, under the auspices of the high commissioner, a great many of the professional people may hope to create a new livelihood for themselves. It is expected that by July 1935, 140 scholars will be absorbed by the universities and other institutions of learning, while 150 will have found places in research laboratories. Another 130 can be maintained after July 1935 on grants. Thus, 420 of the emigrant German scholars will by then have been enabled to continue their work. The committee will make every effort to create further research scholarships and to elaborate group research schemes. Following a suggestion of Prof. Aage Friis of Copenhagen, the high commissioner was asked to pursue negotiations with various governments to obtain permission for placing a limited number of professional refugees both in and outside Europe. It was felt strongly by the committee that the final liquidation of the problem depended on the attitude of these governments. Each country would have to take only a comparatively small number of academic, professional and student emigrants to assure a new livelihood to all those who were driven out of Germany.

The Contrast Between Railway and Road Accidents

The official report for 1933 shows that the number of persons killed on the railways of Great Britain was the lowest for thirty years. Six passengers were killed and 619 were injured in train accidents. The number injured is the highest in five years, but it includes 246 passengers injured as a result of buffer-stop collisions, the majority of whom suffered only from shock. Eight cases of train accident were attended by loss of life among railway employees, the total casualties being eleven killed and eighty-one injured. While higher than last year, the total is less than the average for the five year period 1925-1929. In 206 cases of accident at level crossings thirty-nine persons were killed and forty-two injured, including forty-

three pedestrians, of whom thirty were killed. These figures compare favorably with the average of the five year period 1925-1929. In movement accidents—connected with the movement of railway vehicles, exclusive of train accidents—152 were killed and 2,406 injured, which compares favorably with the previous year. In train accidents the liability to death was only one in 262 million passengers carried, and to injury only one in two and one-half million.

The contrast between the safety of the railways and the dangers of the roads is brought out in a letter to the *Times* by the well known writer Mr. St. John Irvine. He points out that the terrible figures of road accidents are accepted as part of the daily routine, but if a train is derailed and several

Passengers Killed and Injured Annually in Train Accidents in Great Britain

Years	Killed	Injured
1926	13	765
1927	27	518
1928	48	716
1929	3	507
1930	1	552
1931	8	414
1932	4	214

Persons Killed and Injured Annually in Road Accidents in Great Britain

Years	Killed	Injured
1926	4,886	133,888
1927	5,329	148,575
1928	6,138	164,838
1929	6,696	170,917
1930	7,305	177,895
1931	6,691	202,119
1932	6,667	206,450

persons are injured or killed the press is full of heavy headlines and a rigorous inquiry is held. Motorists kill more people in a fortnight than all the railways of Great Britain have killed in seven years. Comparison of the accompanying tables is illuminating.

Why Cambridge Wins the Boat Race

At the health congress of the Royal Sanitary Institute, Dr. J. A. Nixon, professor of medicine in the University of Bristol, attributed the success of Cambridge in the famous university boat race to recognition of the value of sugar in sustaining physical effort. Cambridge's reputation is scientific and it has a well known school of physiology and therefore should know all about the physiology of effort. Oxford's reputation is classic and literary. It is occupied with a past that knew nothing about calories or metabolism and so loses the boat race. Professor Nixon added that Dr. Somervell, the Everest climber, told him that in high altitudes the climbers lost appetite for everything but sugar.

C. J. Heath

Mr. C. J. Heath, known all over the world for his mastoid operation, has died at the age of 77. Educated at St. Bartholomew's Hospital, he early showed his delicate manipulative skill by winning prizes for anatomic dissection and by his appointment as prosector at the Royal College of Surgeons. He was attached successively to the Central Throat, Nose and Ear Hospital and to the Thoat Hospital, Golden Square, of which at the time of his death he was vice president. His papers on "The Cure of Chronic Suppuration of the Ear Without Removal of the Drum, Ossicles or Loss of Hearing" and "The Prevention of Deafness and Mortality, Which Result from Aural Suppuration," have become classics. His remarkable mechanical ability was shown also outside the field of surgery. An enthusiastic sportsman, he invented a chamberless wildfowling gun. During the war he designed an antigas helmet, of which 20 million were supplied to the British army.

PARIS

(From Our Regular Correspondent)

July 11, 1934.

The Absence of Malaria in France

The fact that malaria is rare in France (other than in the island of Corsica) usually occasions surprise. One finds here Anopheles maculipennis, which is the agent in transmitting malaria. There are in France many persons who have previously resided in the colonies and who remain infected for a long time and constitute reservoirs of infection. In spite of the apparently favorable conditions for malaria, the disease is almost never observed in persons who have not resided outside of France. The reservoirs of infection were greatly increased at the close of the war by the return to France of soldiers who had served in the Orient, almost all of them being carriers of Plasmodium praecox and Plasmodium vivax. Nevertheless only a few cases of infection have been diagnosed near certain camps. This has not always been the case. Formerly malaria was prevalent in many regions of France: Flanders (at the mouth of the Somme and the Seine), the Cotentin Swamp, Basse-Loire, Sologne and the valleys of the Aisne, the Charente, the Gironde, the Rhone and the Camargue. But it has disappeared, except in Corsica. Mr. Emile Roubeaud has devoted many years to a study of this peculiar problem. He has published several articles on the subject in the *Annales de l'Institut Pasteur* and in the *Mémoires de la Société de pathologie exotique*. He discovered that in the Vendée and in other regions in which Anopheles maculipennis is still found in abundance the mosquito refuses to attack man and prefers to bite animals. In regions where animals exist in large numbers there is no malaria. Attention had been previously called to this fact. Domestic animals, such as dogs, rabbits, horses, cattle and hogs, seem to constitute for man a protective shield. Roubeaud of the Institut Pasteur, during a recent scientific tour in Corsica, found that large domestic animals were numerous and were allowed almost complete liberty in large areas covered with brush and woods—the hot, dark and close stables, such as the French farmer of the continent usually has, and which are the favorite lurking place of Anopheles, being absent. That is the reason why in Corsica the mosquitoes prefer to establish their abode in the dwellings. On account of the moderate temperatures, domestic animals are rarely sheltered at night in closed stables. Roubeaud observed also that Anopheles gradually adapts itself to new conditions and develops new species, which prefer to bite animals rather than man. The types that bite man have a much weaker biting apparatus than those that attack animals and finally are eliminated by the more vigorous species. The European of the North has seen malaria disappear because he protects his animals better against the cold and thus invites Anopheles to his warm stables. Here is a factor in the prophylaxis of malaria that apparently deserves serious consideration and introduces an additional element in the crusade carried on by the ordinary methods.

Madame Curie

The death of Madame Curie in a sanatorium of the Alpes de Savoie, at the age of 67, has been announced. Her health had been greatly impaired during the last two years and it is supposed that the constant handling of radioactive substances had induced a grave anemia. Madame Curie was a native of Poland, her maiden name having been Marie Sklodowska. In 1893 she entered as a pupil the laboratory of Pierre Curie and later became his wife. She was his collaborator in his search for the elements of radioactivity, the presence of which was suspected in uranium, the first radioactive metal to which Becquerel called attention. As a result of their combined efforts they succeeded, after experimentation covering four years, in isolating a new metal, which was called "polonium" in honor

of Madame Curie's native country, the name being later changed to radium. After the tragic death of Curie in 1906, Madame Curie continued his researches, first in collaboration with Langevin and later with Debierne. With the aid of the latter, she isolated pure radium by electrolysis of its chloride. A special chair was created for her at the Faculté des sciences. Later she was invited to direct, in association with Professor Regaud, the Institut du radium de Paris. Her name was proposed for membership in the Académie des sciences, but she was outdistanced by Branly. In 1922 the Academy of Medicine elected her a member of the Section des membres libres. A number of years ago she made a journey to the United States to receive a gift of radium, which had been offered to her (in the form of a general subscription) for the Curie institute. One of her most recent studies was on the uses of radon. She leaves two daughters, one of whom is married to a physician (Joliot) and is continuing, with the aid of her husband, the researches of her parents on radioactivity, while the other daughter, Eve Curie, has distinguished herself as a pianist and has written several plays.

Mastoiditis Caused by Pneumococcus Mucosus

Mr. Le Maitre, head of the otorhinolaryngologic department of the Hôpital St. Louis, has presented to the Academy of Medicine an outline of the results of a research in otology, of which branch he is an eminent representative. The point in question is the peculiar rôle of Pneumococcus mucosus, a chain pneumococcus that has been termed "pneumococcus III." The cases of mastoiditis caused by Pneumococcus mucosus are the gravest of the ear suppurations. They may develop without pain, without fever and when the victim is in good general condition. No clinical sign distinguishes them from ordinary simple otitis. The mastoid is often totally destroyed, and the lesion tends to involve the deeper tissues, producing external pachymeningitis. The occipital and the parietal bones and the zygoma soon become invaded. All the cases of meningitis observed that were due to Pneumococcus mucosus were fatal. The diagnosis can be made only by bacteriologic examination, and the signs of mastoiditis due to Pneumococcus mucosus are almost entirely of a radiologic nature. Treatment should consist of early and ample mastoidectomy. Serotherapy is ineffective and vaccinotherapy is still on trial. Disinfection of the cavity must be continued as long as Pneumococcus mucosus is found.

BERLIN

(From Our Regular Correspondent)

July 9, 1934.

The Surplus of Medical Students

The medical league has just published some interesting figures on the overcrowding of German universities and the academic professions. A curve representing medical study during the past sixty years shows three peaks and three lows. From 1870 to 1880 the number of medical students ranged around 3,500 and in 1890 rose to about 8,700. The number of medical licenses granted annually between 1888 and 1903 ranged between 1,200 and 1,500. This excessive number reacted on the number of medical students, which dropped to 6,400 in the summer of 1906. The number of licenses declined in 1907 to 500. This low figure was the signal for increased interest in medical study, so that the number of medical students rose the following summer to 16,000, which denoted an increase of about 150 per cent over the enrolment for the previous summer. The conditions that obtained during the war caused a further increase up to 22,500 students in 1919. Announcement of this excessive registration acted again as a deterrent, so that in 1925 the number of medical students dropped to about 7,750. A dearth of assistant physicians and the uncritical announcement of the incomes of panel physicians again occasioned an enormous increase of medical students, and particularly of women students, the number in 1933 being five times that of 1914. Table 1 shows the registration for the summer semester of certain years between 1914 and 1933.

TABLE 1.—*Registration of Medical Students, 1914-1933*

Summer Semester	Total Registration	No. of Women
1914	16,440	979
1919	22,474	2,237
1925	7,758	1,225
1927	9,663	1,541
1928	11,935	1,934
1929	15,067	2,521
1930	18,088	3,261
1931	21,541	4,078
1932	24,808	4,919
1933	25,264	5,123

The classification of the enrolled medical students according to the number of semesters they have studied (as of the summer semester in 1933) reveals the approximate number of graduates during the next few years.

TABLE 2.—*Students According to Semesters*

No. of Semesters of Medical Study of Various Students	Total No. of Medical Students, with Varying No. of Semesters	No. of Women Students, with Varying No. of Semesters
1	2,935	758
2	621	156
3	4,352	905
4	854	205
5	4,565	979
6	868	167
7	3,251	625
8	743	160
9	3,166	529
10	642	122
11	2,749	478
12	196	24
13	152	8
14 or more	158	6
Unknown	12	1
Totals:	25,264	5,123

In explanation of the alternate shifting in the figures, it may be noted that most German gymnasiums (secondary schools) end the school year with the beginning of a summer semester (at Easter) at the university. From these figures it is evident that approximately 4,000 students annually will take the government examination (staatsexamen).

The number of Jewish medical students in the summer semester of 1932 was 1,893, which included 591 women students. In the summer semester of 1933 the total number of Jewish medical students dropped to 916, which included 328 women students. Of the 916 Jewish students, 260 were foreigners (thirty-nine women).

TABLE 3.—*Number of Licenses to Practice Granted in Recent Fiscal Years*

Fiscal Year	Total No. of Licensed Graduates	No. of Licensed Women Graduates
1922-1923	3,062	347
1923-1924	2,616	351
1924-1925	2,430	315
1925-1926	2,033	255
1926-1927	1,488	229
1927-1928	1,158	181
1928-1929	985	188
1929-1930	1,101	202
1930-1931	1,681	270
1931-1932	1,616	273

The number of licenses for 1934 is estimated at 3,500, for 1935 at 4,000, for 1936 at 4,500, and for 1937 at 4,500. In 1931 the annual number of newly licensed physicians needed was placed at 1,200-1,400; but this figure is considered by many as too high. If an optimistic view is taken (that is, if economic conditions improve), more positions might be needed; but it

is not likely that the total number of new physicians required would exceed 1,500. The hospitals and similar institutions require about 2,000 new assistant physicians annually. Under the present conditions it appears likely that these institutions also will have to deal with an excessive supply of physicians, so that a considerable number of physicians either will have to work as volunteers without a fixed salary or will be forced to serve in "work service camps" or elsewhere. In any event, the number of physicians seeking openings during the next few years will vastly exceed the requirements of the country and the limitations imposed by economic conditions.

Panel Physicians and Recent Legislation Pertaining to Aryans and Communists

In the *Reichsarbeitsblatt*, the official organ of the federal ministry of labor, Ministerialrat Dr. Karstedt publishes an interesting article on the application to the panel physicians of recent legislation pertaining to Aryans and communists. A general survey is in order now that, with the exception of from twenty to thirty complaints, still to be settled, the work of excluding certain physicians from panel practice, in accordance with the published regulations of the new régime, has been completed. The records show that on Jan. 1, 1933, there were 35,000 physicians who had been admitted to panel practice in Germany. Just what percentage of this number were non-Aryans is unknown, as it is difficult to secure reliable statistics. For Berlin, fairly exact data are available, as prepared by Dr. Löllke, the new chairman of the Berlin Aerztekammer (chamber of physicians). According to his estimation, the total number of physicians controlled in 1933 by the Berlin Aerztekammer was 6,558. So far as can be ascertained, 47.8 per cent of this number, or 3,135, were Aryan, whereas 52.2 per cent, or 3,423, were non-Aryan. In the group of non-Aryans there is a small number of physicians who are married to Jews or whose lineage is doubtful. The total number of physicians registered in Berlin as of Feb. 14, 1934, was 6,203, showing a reduction of 355. Of this number 53 per cent, or 3,289, were Aryan, while 47 per cent, or 2,914, were non-Aryan. Here also physicians with a Jewish spouse are counted among the non-Aryans. During the period from the middle of 1933 to Feb. 14, 1934, 154 Aryans were added to the register and 509 non-Aryans were removed. To be more exact, there were 285 Aryans added and 131 were removed, while forty-three non-Aryans were added and 552 were removed. Although, as will be seen from these figures, the relation of the Aryan to the non-Aryan physicians has been reversed, the total increase of the Aryans amounted to only 2.5 per cent, whereas the total reduction of the non-Aryans represented 8.2 per cent of the total number. Among the panel physicians (kassenärzte) in Berlin, which in October 1933 numbered 3,481, Dr. Löllke estimates that there were 40.3 per cent Aryan, or 1,404, and 59.7 per cent non-Aryans, or 2,077. According to the last enumeration (February 1934) the total number of panel physicians (kassenärzte) in Berlin was 3,144: 51.6 per cent Aryans, or 1,623, and 48.4 per cent non-Aryans, or 1,521. The number of panel physicians shows therefore a diminution of 337, as compared with a reduction of 355 in the number of physicians in general. It is thus evident that the reduction has affected chiefly the panel physicians.

Dr. Karstedt states that in Berlin a total of 1,144 panel physicians have been excluded. Further information may be obtained from the figures that concern the decisions on complaints by reason of exclusion. The supreme authority in reviewing these complaints was the federal minister of labor. The leagues of the panel physicians had excluded 1,030 physicians by reason of non-Aryan origin, 338 by reason of communistic activities, and nine for various other reasons, or a total of 1,377, most of whom filed objections. First the league of the physicians of Germany expressed its views in the matter, and then the federal minister of labor decided that 827 physicians should not be admitted, ninety-one physicians being excluded by reason of communistic activities, and that 524 physicians should be retained by reason of having fought at the front in the World War. In twenty-six cases no decision was reached. As communistic activity the ministry of labor interpreted all public or private activity or sufferance that was calculated to aid and abet communistic tendencies, even though the suspected person had not been a member of the communist party or of its affiliated organizations, particularly if he had been a member of the Verein sozialistischer Aerzte or of certain Arbeitersamariterkolonnen, and the like.

On the basis of general observations, it may be assumed that at least half of the excluded physicians filed complaints by reason of unjust decisions. Dr. Karstedt points out emphatically that the provisions of the decree were carried out much more rigorously with respect to the physicians than as regards the attorneys. This is particularly true with reference to the question as to whether the complainant was justified in claiming service at the front during the war.

RIO DE JANEIRO

(From Our Regular Correspondent)

July 13, 1934.

International Center for the Study of Leprosy

The work of installation at the center for the study of leprosy is proceeding rapidly. This institution is being established in accordance with an arrangement between the League of Nations and the Brazilian government with the philanthropic cooperation of Dr. Guilherme Guinle.

Its inauguration recently took place at the office of the secretary of the exterior in the presence of high authorities, of the specialists on the staff of the new institution, and of the representative of the League of Nations, Dr. Etienne Burnet. The preparatory work of the International Center of Leprology has been started. The center is already organized with its complete personnel, having its seat at the Institution Oswaldo Cruz, the director of which is Prof. Carlos Chagas, who is also director of the International Center of Leprology, and with the installation of a pavilion especially constructed for this purpose at the Hospital-Colonia of Curupaity, in Jacarépaguá, a leprosarium exclusively erected for the sick of the federal district and under the direction of the national department of public health. This new pavilion has two stories with wards for two and four patients and a capacity of fifty patients, large verandas and recreation and lecture rooms. On the first floor are the consultation room and treatment rooms. The noncontagious cases of the disease will be treated in private clinics, leaving the beds in the leprosarium for the isolation of the contagious cases.

In the Hospital-Colonia of Curupaity is the section of clinical and experimental therapeutics. The school of Curupaity owes its importance in the center to the visit made to the colony in 1931 by Professor Nocht, well known German expert, who came to Brazil for the League of Nations subsequent to the original proposition made by Professor Chagas.

Dr. Couto is Dead

Dr. Miguel Couto, a great figure in medicine in Brazil, died recently, at the age of 70 years, from angina pectoris. Dr. Couto graduated as a Doctor in Medicine from the Faculty of Medicine of Rio de Janeiro in 1886. As a student he was noted for a devotion to his studies, which became more intense during his professional life. Dr. Couto became substitute professor of propedeutics and clinical medicine in the Faculty of Medicine of Rio de Janeiro in 1898, after making a brilliant competitive discussion, with Dr. Almeida Magalhães, who was also a prominent member of the profession. In 1901 he was

appointed head professor of clinical medicine, and he held that position until his death. He was the best known of Brazilian clinicians. Among his books and contributions to periodicals were "Dos espasmos nas affecções dos centros nervosos," "Das Gelb-Fieber," 300 pages in Nothnagel's Medical Encyclopedia, 1901, and "Lições de Clinica Medica," in three large volumes published in 1916, 1918 and 1933. His studies on yellow fever, cardiocirculatory murmurs, visceral polysteatosis, beriberi and aphasia are all well known. He was the first in Brazil to use methylene blue in the treatment of malaria. He was elected president of the Academia Nacional de Medicina of Brazil in 1913 and held this position until his death. The Academia Nacional de Medicina of Brazil is the oldest scientific institution of South America. It has existed for 105 years. Dr. Couto was a member of the Academia Brasileira de Letras and of many foreign scientific societies.

A Method of Staining Blood for the Diagnosis of Leukemia

Dr. H. Fróes presented before the Sociedade Medica dos Hospitaes of Bahia a report on a staining method which permits a probable diagnosis of leukemia. He examines macroscopically slides prepared with a thick drop of blood and stained by the method of Cropper-Fróes, in which methylene blue is used. This method was reported by Dr. J. A. Fróes to local medical societies thirteen years ago. Dr. H. Fróes exhibited a number of preparations. One slide was prepared with normal unstained blood; the second and third slides were prepared with normal and leukemic blood, respectively, and stained by the Cropper-Fróes method. That of normal blood showed a clear green color, while that of leukemic blood showed an intense blue. With this method the nuclei of the leukocytes are stained by the methylene blue, and since in leukemic blood there is a great number of leukocytes, the thick slide of leukemic blood will acquire an intense color. The method is of value, especially when no microscope is available.

ITALY

(From Our Regular Correspondent)

June 15, 1934.

Regulations Concerning Narcotics

The new regulations concerning narcotics, as published in the *Gazzetta Ufficiale*, provide that penalties in the form of imprisonment for from one to three years and a fine of not less than 1,000 lire ($84) shall be imposed on any person who grows Papaver somniferum secretly, who produces crude opium or who collects or carries on traffic in opium capsules, leaves of coca and/or Indian hemp.

No public or private place may be used for the gathering of persons who indulge in the use of narcotic substances; not only the keeper of the place but also the addicts are subject to a fine and/or imprisonment.

Persons authorized to sell narcotics may not dispense them without a medical prescription nor to persons whose identity is unknown. Morphine, diacetylmorphine, cocaine and their derivatives may not be sold other than in the form of an ointment or a solution. The medical prescription must be written with ink or indelible pencil and according to a special form; it must contain a general description and the address of the patient, the amount of the dosage written out in full, and directions as to the manner and time of administration.

Practitioners who aid or visit a narcotic addict must notify the authorities within two days or they will be subject to a fine of 2,000 lire ($168).

Academy of the Medical Sciences

The Accademia delle scienze medico-chirurgiche met recently in Naples, under the chairmanship of Professor Pascale, senator. Pennetti spoke on the relation between splenectomy and carbohydrate and oxalic acid exchange. According to some writers the removal of the spleen increases the tolerance for carbohydrates even to the point of producing permanent hyperglycemia; according to others such tolerance is diminished. The speaker studied in splenectomized animals both carbohydrate and oxalic acid exchange. In experiments on dogs he found a distinct but transitory hyperglycemia, which was usually accompanied by hyperoxaluria of short duration.

Tinozzi discussed, from the experimental point of view, the heterologous neoplastic transplant. In order to improve the outcome of heteroplastic transplants of malignant tumors from rats to mice, and vice versa, he added, to the tumor pulp, blood homologous for the receptive animal and heterologous for the tumor, or vice versa. The carcinomas always gave a negative result but the sarcomas gave some positive results. The best results were secured with the addition of blood homologous for the tumor. Jensen's sarcoma brought about occasionally the formation of a sarcoma in the mouse. The tumors obtained differed histologically somewhat from the original. A study of their metabolism showed that the carbohydrate exchange in their cells is quite similar to that of the sarcoma of the rat and differs from that of the original sarcoma of the mouse. Attempts to transplant to the rabbit and the guinea-pig the rat and mouse tumors, with the addition of blood, always failed. The blood added to the tumor pulp has a prevailingly local action and furnishes a favorable condition for the growth and the reproduction of the neoplastic elements at the site of the injection. The active part of the blood in this process is the corpuscles.

Argentino carried out research on the healthy and the cataractous crystalline lens. He sought to discover whether the fluorescence that the normal crystalline lens emits in Wood's light can be attributed to organic or inorganic components and concluded that the phenomenon cannot be assigned wholely to the latter, since the fluorescence is found also in the sections of the organ fixed in aqueous solution of formaldehyde in which certain inorganic salts are dissolved. He holds that the greater fluorescence of the cataractous crystalline lens, in comparison with the normal lens, can be ascribed in part to the larger quantity of its inorganic components. But this hypothesis is not definitive, since the histologic changes that the crystalline lens undergoes in the presence of cataract are manifold.

The Gynecologic Convention

A gynecologic convention, which was attended by many specialists, was held recently at Salsomaggiore. Professor Alfieri, director of the Clinica di Milano, was elected president.

Professor Cova, director of the Clinica ginecologica and of the research center for the treatment of female sterility, at the University of Turin, described the principal causes of sterility in women, the many forms of treatment (particularly hormone treatment) that may be applied, and the experimental and practical results secured.

Professor Rossi of Parma spoke on the contributions of radiology in the diagnosis of sterility in women. With the technic proposed it is possible to establish, by means of radiology, monolateral or bilateral closure of the tube and also the precise seat of the obstruction.

New Mental Institutes at Genoa

The city of Genoa has reorganized the aid for mental patients by combining the three institutes at Cogoleto, Genova-Quarto and Paverano. The institute at Cogoleto is organized as a hospital village with a large agricultural colony in full activity and an industrial enterprise with various features. Here the reeducation of chronic mental patients who are physically strong and amenable to treatment is undertaken. A series of new buildings has been erected at a cost of 5,000,000 lire ($420,000).

At Genova-Quarto, in the vicinity of the old psychiatric hospital, a new clinical institute for mental diseases has been erected, with a capacity of 500 beds, which is equipped with scientific laboratories. The expenditures amounted to 10,000,000 lire ($840,000).

Also a new leprosarium has been erected.

Professor Simonetta

Prof. Luigi Simonetta, senator, died at Milan at the age of 73. He devoted himself for many years to scientific research in the Hygienic Institute of the University of Siena. He was elected to membership in many high assemblies, particularly the Consiglio superiore della pubblica istruzione, in which body he was for a long period a representative of the senate. He was well known as a philanthropist, having been president of the Collegio per gli orfani dei sanitari, which institution he brought to a high degree of efficiency, having contributed generously from his private means. He was a member of the Direttorio nazionale del sindacato dei medici and of the Associazione per l'igiene, and likewise a commissioner of the Ordine dei medici della provincia di Roma.

The Decompression Treatment of Cerebral Tumors

In a communication to the Accademia dei fisiocritici di Siena, Prof. G. D'Ayala admitted that in a large number of cases the physician must be content with prolonging the life of the patient by relieving the symptoms and the pain; in other cases it is important to overcome the acute phases before resorting to a radical intervention; in still other cases it is necessary to improve the general condition of the patient in order to facilitate removal of the tumor. To accomplish this purpose, it is necessary to make use of ventricular puncture and the administration of hypertonic solutions, and, above all, decompressive craniectomy. Subtemporal decompression is not devoid of danger; nevertheless, of the forty-four patients observed in the speaker's clinic, all survived the operation. In many cases the operative results were significant; in other cases they were negative. The technic commonly employed is that of Cushing.

Insurance Against Occupational Diseases

The Italian Association of Legal Medicine held recently a session at the University of Parma to study the medicolegal problems connected with compulsory insurance against occupational diseases. Professor Perrando of Genoa called attention to the need that, in schools dealing especially with matters of social insurance, more attention be given to instruction in legal medicine in keeping with modern demands.

The medicolegal conception of occupational disease was discussed. Of importance was the resolution that insurance against occupational diseases is the first step toward a complete protection of the workmen's income against all the causes that operate to reduce it: accident, disease, unemployment, invalidity and old age. Only such a system of complete insurance would make it possible to give adequate protection in many characteristic cases, as, for example, cases of occupational disease aggravated by accident.

Professor Lattes spoke on the compensability of the consequences of infestation with ancylostomiasis. Of the various diseases covered by law, ancylostomiasis is the only one in which there is a need, for prophylactic purposes, of medicinal interventions in healthy carriers, before the infestation has produced morbid symptoms. Since insurance covers only syndromes actually produced, it happens that the consequences of disinfestation, which are sometimes fatal, are not covered by an indemnity, although they may be regarded as accidents. This is a serious defect in the law.

Prof. Giuseppe Bianchini, of the University of Bari, presented the results of his notable research on the defense apparatus of the lung in relation to pneumonoconiosis. Soon after birth, with the onset of respiration, there is within the pulmonary alveoli a defense system formed of phagocytic cells, designed to check and eliminate particles taken in with the respiration from the outside world. The epithelial lining of the alveolus does not participate, directly or indirectly, in this function, since it must remain ready uninterruptedly, in any event of life, to perform its respiratory function.

Professor Biondi, of the University of Siena, reported the results of research on toxicology in connection with occupational diseases, particularly mercurialism in fur workers and the toxicology of tetra-ethyl lead. Biondi traced the general lines of thought among Italian medicolegalists with reference to insurance against occupational diseases.

Academy of Medical Sciences, Palermo

At a meeting of the Accademia delle science mediche di Palermo, Dr. Mattina spoke on the changes in the blood sugar in experimental stenosis and occlusion of the choledochus. Not only in occlusions but also in stenosis of the principal biliary duct, hyperglycemia is constantly observed. In the animals in which complete occlusion was produced experimentally, increase of the blood sugar index developed rapidly during the first fifteen to twenty days of experimentation. In the animals in which stenosis was induced, hyperglycemia developed slowly during the first fifteen days following the operation, then increased rapidly up to the thirty-fourth day of experimentation. The highest values of the blood sugar in the dogs with occluded choledochus (fifteenth to twentieth day) were constantly higher than the highest values secured (on the thirty-fifth day) in the dogs in which stenosis was produced. After the days mentioned, a slow and gradual dimunition of the blood sugar content was observed. The speaker explained the different behavior of the blood sugar as between occlusion and stenosis of the choledochus by the diversity of the changes in the liver that are produced in the two cases. In occlusion the liver undergoes grave changes from the beginning, and it is no longer capable of storing glycogen. In stenosis the liver lesions are in the beginning milder, and the increase of the blood sugar occurs slowly but with acceleration parallel with the aggravation of the changes.

Meeting of Italian Surgical Society

At a session of the Società italiana di chirurgia della bocca, Dr. Francia spoke on immunotransfusion in stomatology, stating that he had resorted to that method in a case of osteomyelitis of the lower jaw, using 200 cc. of blood and repeating the treatment three days in succession. The results were favorable. He did not succeed so well in two cases of pyorrhea treated (in addition to the usual methods) with a small transfusion of blood derived from a person convalescing from furunculosis. The speaker held that the method of immunotransfusion is to be regarded as a heroic remedy in certain cases of dental surgery but that it was not destined to come into widespread use.

De Fazio discussed the relation between dental caries and pregnancy. He studied the resistance index and the state of the teeth in pregnancy. The diet and endocrine factors have a great influence on dental trophism. From his examination of eighty pregnant women, De Fazio discovered that in the cases in which there was the highest percentage of decayed teeth the anamnesis revealed also other important factors; namely, disturbances of nutrition, hereditary defects, chronic diseases and endocrine disorders. When such factors did not exist, the caries could usually be traced to a period preceding marriage. The number of cases of dental lesions following marriage were too few to conclude that pregnancy exerts a harmful action on teeth.

Marriages

PAIGE E. THORNHILL, Norfolk, Va., to Miss Marianne E. Avery of Watertown, N. Y., at Towanda, Pa., June 16.

ALEXANDER H. STEVENS JR., Farmville, N. C., to Miss Vera Naomi Bowen of Wilmington, July 8.

ALFRED ABRAHAM KENT JR., Granite Falls, N. C., to Miss Lena Evelyn Hellen at Vanceboro, July 19.

ROBERT HOUGH JORDAN, Beckley, W. Va., to Miss Mary Edith Faulkner of Urbanna, Va., June 30.

HARDY H. SMITH JR., Fort Smith, Ark., to Mrs. Eva Jay Ives Armstrong of New Orleans, June 23.

JACOB FEIGENBAUM, Montreal, Que., Canada, to Miss Mina Lee Simon of Brookline, Mass., June 24.

MAXWELL GOSSE, Poughkeepsie, N. Y., to Miss Ruth Dietendorf Empie of Baltimore, April 7.

WILLIAM J. ELLIS, Covington, Va., to Miss Bessie Virginia Withrow of Clifton Forge, June 8.

WILLIAM J. REED, Oakland, Calif., to Miss Melba L. Evans of Peoria, Ill., in Buffalo, recently.

JOHN P. THOMAS JR. to Miss Thelma Elizabeth Fowler, both of Charleston, S. C., recently.

GERALD M. LANE, Springfield, Ohio, to Miss Mildred Everhart of Mechanisburg, recently.

EDWIN OWEN NIXER to Miss Vivienne Elizabeth Davies, both of Mentor, Ohio, August 1.

HAL E. FREEMAN, Willard, Mo., to Miss Mildred Irene Real at Louisville, Ky., June 14.

WILLIAM SCHOOLFIELD, Orleans, Ind., to Miss Martha Jacobs of Mitchell, June 23.

VIRGIL STOVER, Grand Rapids, Mich., to Miss Gladys Baribeau of Chicago, June 26.

J. GORDON RENNIE to Miss Anne Marie Lund, both of Petersburg, Va., June 27.

CHARLES BAKER, West Milton, Ohio, to Miss Helen Bradley of Dayton, recently.

ORIN QUEAL FLINT to Miss Isabelle Foreman, both of Delhi, N. Y., August 18.

WALTER STOEFFLER to Miss Allene Hoch, both of Indianapolis, recently.

Deaths

Thomas **Vanhook Fitzpatrick,** Cincinnati; Cincinnati College of Medicine and Surgery, 1875; fellow of the American College of Surgeons; at one time mayor of Norwood; professor of laryngology and otology, at his alma mater, 1889-1903, and dean, 1899-1903; professor of laryngology and otology, Woman's Medical College of Cincinnati, 1891-1895; formerly secretary of the Cincinnati Academy of Medicine; for many years on the staffs of St. Mary's and the Good Samaritan hospitals; aged 79; died, June 25, of heart disease.

Millard Homer Foster, Battle Creek, Mich.; Indiana University School of Medicine, Indianapolis, 1926; member of the Indiana State Medical Association and the American Psychiatric Association; served during the World War; on the staff of the Battle Creek Sanitarium; formerly on the staffs of the City, Methodist, Riley and Long hospitals, Indianapolis; aged 38; was killed, July 1, in an automobile accident near Three Rivers.

Pinkney Venning Mikell, Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1900; member of the South Carolina Medical Association and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; on the staffs of the Columbia and South Carolina Baptist hospitals; aged 56; died, July 31, of injuries received in an automobile accident.

Peter **Duncan MacNaughton** ✠ Lieut., Colonel, U. S. Army, retired, Wenham, Mass.; University of Michigan Medical School, Ann Arbor, 1892; veteran of the Spanish-American and World wars; entered the medical corps of the U. S. Army as a major in 1920 and retired with rank of lieutenant colonel in 1931 for disability in line of duty; fellow of the American College of Surgeons; aged 66; died, June 8.

Frank L. Schum, Huntingdon, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1886; member of the Medical Society of the State of Pennsylvania; past president of the Hunt County Medical Society; for many years county coroner; on the staff of the J. C. Blair Memorial Hospital; aged 69; died, June 25, of diabetes mellitus and chronic nephritis.

Francis Michael O'Gorman ✠ Buffalo, N. Y.; University of Buffalo School of Medicine, 1899; fellow of the American College of Surgeons; served during the World War; attending surgeon to the Buffalo Hospital of the Sisters of Charity and consulting surgeon to the Deaconess Hospital; aged 56; died, August 9, of cardiovascular kidney disease.

Alfred Smith Frasier ✠ Dothan, Ala.; University of the South Medical Department, 1905; Vanderbilt University School of Medicine, Nashville, 1906; fellow of the American College of Surgeons; part owner of the Frasier-Ellis Hospital; aged 53; died, June 14, of pneumonia.

Norman Francis Peacock, Darlington, Ind.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; member of the Indiana State Medical Association; aged 60; died, July 8, of cardiorenal disease and pulmonary embolism.

Charles Christian Biedert ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1897; for many years on the staffs of the Episcopal Hospital and the Kensington Hospital for Women; aged 59; died, July 10, of hypertension and cardiac hypertrophy.

Daniel Joseph Monihan ✠ Chester, Pa.; Medico-Chirurgical College of Philadelphia, 1907; aged 52; on the staffs of the Taylor Hospital, Ridley Park, and the Fitzgerald Mercy Hospital, Darby, where he died, June 28, following an operation for appendicitis.

Jacob P. Strayer, Oil City, Pa.; Jefferson Medical College of Philadelphia, 1880; member of the Medical Society of the State of Pennsylvania; aged 80; on the staff of the Oil City Hospital, where he died, July 12, of myocarditis and hypertrophy of the prostate.

Jefferson Nichol Drennen, Loydsville, Ohio; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1890; member of the Ohio State Medical Association; aged 71; was found dead, June 26, of cardiac decompensation.

Max Henry Klaus, Cleveland; Western Reserve University Medical Department, Cleveland, 1902; member of the Ohio State Medical Association; aged 54; for many years on the staff of the Lutheran Hospital, where he died, July 15, of septicemia.

Charles Oliver Hain, Cleveland; Western Reserve University Medical Department, Cleveland, 1897; member of the Ohio State Medical Association; for many years on the staff of the Lutheran Hospital; aged 64; died, July 11, of heart disease.

John Gilmore Owsley, Lily, Ky.; Hospital College of Medicine, Louisville, 1904; member of the Kentucky State Medical Association; for many years member of the county board of education; aged 67; died, June 23, of heart disease.

Ernest Robert McIntosh, Weston, W. Va.; Tufts College Medical School, Boston, 1897; member of the West Virginia State Medical Association; on the staff of the General Hospital; aged 59; died, June 2, of carcinoma of the bladder.

Richard Rupert Stockard, Columbus, Miss.; University of Virginia Department of Medicine, Charlottesville, 1868; University of the City of New York Medical Department, 1869; aged 84; died, July 21, at Blacksburg, Va., of myocarditis.

John Howard Hall, Sacramento, Calif.; Atlanta College of Physicians and Surgeons, 1905; member of the California Medical Association; served during the World War; aged 52; died, July 2, in the Sutter Hospital, of duodenal ulcer.

Isaac Thompson McCarty, Delaware, Ohio; Western Reserve University Medical Department, Cleveland, 1897; member of the Ohio State Medical Association; aged 66; died, July 11, of myocarditis, angina pectoris and nephritis.

Abraham Pincos Fishman, Providence, R. I.; Jefferson Medical College of Philadelphia, 1905; aged 53; died, June 24, of pneumonia, as the result of septicemia, following a cut on the hand suffered during an operation on a patient.

Levi Y. Turner, Daingerfield, Texas; University of Louisville (Ky.) School of Medicine, 1890; member of the State Medical Association of Texas; formerly county health officer; aged 74; died, May 18, in Dallas, of heart disease.

Edward Swasey, Worcester, Mass.; College of Physicians and Surgeons, Medical Department of Columbia College, 1878; aged 81; was found dead in bed, July 23, at Pleasant Point, Maine, of cerebral embolism and arteriosclerosis.

John Rodney Lambert, Quincy, Ill.; Rush Medical College, Chicago, 1889; University of Pennsylvania School of Medicine, Philadelphia, 1890; aged 66; died, July 15, in St. Mary's Hospital, of splenomyelogenous leukemia.

Francis Albert Bakeman, Franklin, N. H.; Dartmouth Medical School, Hanover, 1901; member of the New Hampshire Medical Society; on the staff of the Franklin Hospital; aged 59; died, July 9, of cerebral hemorrhage.

Carl Oliver Reed, Albuquerque, N. M.; Sioux City (Iowa) College of Medicine, 1905; served during the World War; on the staff of the Veterans' Administration Facility; aged 51; died, July 7, of a ruptured left ventricle.

George M. Sands, Rifle, Colo.; Baltimore University School of Medicine, 1896; member of the Colorado State Medical Society; aged 66; died, July 9, as the result of injuries received in an automobile accident last Christmas.

William Praytor Cooke, Odenville, Ala.; University of the South Medical Department, Sewanee, Tenn., 1900; aged 56; died, June 10, in a hospital at Pell City, of injuries received in an automobile accident.

Louis Albert Ivey, Washington, D. C.; Howard University College of Medicine, Washington, 1925; served during the World War; aged 39; was killed, June 21, in an automobile accident at Spartanburg, S. C.

Anthony H. Vorwerk, Burlington, Iowa; State University of Iowa College of Medicine, Iowa City, 1897; member of the Iowa State Medical Society; aged 60; died suddenly, July 26, of heart disease, at St. Louis.

Henry Hodges Stearns, New York; New York University Medical College, 1897; ship surgeon for the United Fruit Company; aged 60; died, July 25, of cerebral hemorrhage while aboard the S. S. *Peten.*

Henry Allen Barr ✦ Beaumont, Texas; University of Texas School of Medicine, Galveston, 1896; on the staff of the Beaumont General Hospital; aged 60; was found dead in bed, July 12, of heart disease.

Albert Golden Eaddy ✦ Johnsonville, S. C.; University of the South Medical Department, Sewanee, 1900; president of the Florence County Medical Society; aged 56; died, June 21, of cerebral hemorrhage.

George Vredenburg Van Neste, Hopewell, N. J.; Jefferson Medical College of Philadelphia, 1883; member of the Medical Society of New Jersey; aged 78; died suddenly, May 9, of heart disease.

Amandus Max Horn, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1912; member of the Illinois State Medical Society; aged 66; died, July 24, of arteriosclerosis and myocarditis.

Robert A. Alton ✦ Lansing, Mich.; Detroit College of Medicine and Surgery, 1913; on the staffs of the Edward W. Sparrow Hospital and St. Lawrence Hospital; aged 43; died, July 16, of pneumonia.

John Harrison Blanks, Zion, Ill.; University of Tennessee Medical Department, Nashville, 1891; city health officer; aged 68; died, July 3, of gangrene of both lower legs and feet and chronic heart disease.

Frank Howard Van Dyke, St. Paul, Minn.; Miami Medical College, Cincinnati, 1886; aged 75; died, June 7, in Rochester, Minn., of carcinoma of the pancreas and bronchopneumonia.

Melville M. Morrow, New Carlisle, Ohio; Eclectic Medical Institute, Cincinnati, 1885; member of the Ohio State Medical Association; aged 73; died, June 27, of carcinoma of the liver.

John Henry O'Connor ✦ Boston; Harvard University Medical School, Boston, 1896; aged 65; died, July 7, in St. Elizabeth's Hospital, of chronic myocarditis and rheumatic heart disease.

Robert Gordon MacKenzie ✦ Frankfort, Mich.; University of Michigan Medical School, Ann Arbor, 1907; formerly mayor of Ann Arbor; aged 52; died, June 8, of heart disease.

Thomas Marion McGill, Robbins, Tenn.; Tennessee Medical College, Knoxville, 1906; aged 49; died, June 6, in the Knoxville (Tenn.) General Hospital, of cirrhosis of the liver.

Jefferson Neal McKnight, Fort Worth, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1879; formerly health officer; aged 82; died, June 26, of heart disease.

Jerome Jesse Manchester, Indianapolis; University of Vermont College of Medicine, Burlington, 1890; aged 76; died, June 28, in the City Hospital, of arteriosclerotic heart disease.

Frank J. A. Minnich, St. Louis; University of Pennsylvania School of Medicine, Philadelphia, 1873; aged 83; died, June 28, of chronic myocarditis and cerebral hemorrhage.

Cicero Butler Patton, Batesville, Ark.; University of Louisiana Medical Department, New Orleans, 1872; Civil War veteran; aged 90; died, May 3, of cerebral hemorrhage.

Louis N. Burleson, Cabarrus, N. C.; University of Maryland School of Medicine, Baltimore, 1891; aged 66; died, June 24, in the Mercy Hospital, Charlotte, of pneumonia.

Archibald McGauhey, Robinson, Kan.; University of Louisville (Ky.) School of Medicine, 1893; formerly mayor; aged 63; died, June 13, of carcinoma of the throat.

James A. Stough, Lagrange, Ind.; Cincinnati College of Medicine and Surgery, 1889; aged 72; died, July 10, of chronic myocarditis, nephritis and prostatic hypertrophy.

Joseph Gaston Baillie Bulloch, Washington, D. C.; Medical College of the State of South Carolina, Charleston, 1877; aged 82; died, July 4, of arteriosclerosis.

Thomas C. Ross, Philadelphia; Medico-Chirurgical College of Philadelphia, 1905; member of the Medical Society of the State of Pennsylvania; aged 57; died, June 6.

Simon Alexander Krumme, Fond du Lac, Wis.; Rush Medical College, Chicago, 1886; aged 69; died, July 17, of pernicious anemia and cardiac decompensation.

Charles Le Roy Burke, Glendale, Calif.; University Medical College of Kansas City, Mo., 1882; aged 80; died, June 20, of arteriosclerosis and cerebral thrombosis.

Judson Arlington Van der Hulse ✦ Akron, Ohio; Ohio Medical University, Columbus, 1899; aged 60; died, July 13, in Asheville, N. C., of cerebral embolism.

Theodore M. Lee, Murrayville, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1908; aged 54; died, March 5, of carcinoma of the throat.

J. W. Johnson, Kingsburg, S. C.; Baltimore Medical College, 1892; aged 61; died, June 29, in the Saunders Memorial Hospital, Florence, of heart disease.

William Claiborne Isom, East St. Louis, Ill.; St. Louis College of Physicians and Surgeons, 1898; aged 62; died, July 8, of cholecystitis and cholelithiasis.

Marshall Evans Smith, Richfield Springs, N. Y.; Dartmouth Medical School, Hanover, N. H., 1892; aged 66; died, July 1, of cerebral hemorrhage.

Charles Newton Sowers ✦ Benton Harbor, Mich.; University of Michigan Medical School, Ann Arbor, 1893; aged 74; died, July 17, of carcinoma.

John Marvin Brooks, Pasadena, Calif.; University of Wooster Medical Department, Cleveland, 1881; aged 77; died, June 14, of heart disease.

Clement Paul LeLasher, New Britain, Conn.; Medical School of Maine, Portland, 1920; aged 45; died, July 18, of cerebral hemorrhage.

William Omar Vallette, Goshen, Ind.; Northwestern University Medical College, Chicago, 1891; aged 69; died, June 1, of heart disease.

Winfield S. Tharp, St. Elmo, Ill.; University of Louisville (Ky.) School of Medicine, 1875; aged 85, died, May 31, of myocarditis.

Charles William Mackenbach, Cincinnati; Medical College of Ohio, Cincinnati, 1900; aged 65; died, June 7, of carcinoma.

Robert Willcox Wallis, Rockdale, Texas; Beaumont Hospital Medical College, St. Louis, 1894; aged 61; died, May 5.

Miles D. Cunningham, Decatur, Ga.; Atlanta Medical College, 1893; aged 61; was found dead, July 13, of heart disease.

William Franklin Simmons, Kell, Ill.; Barnes Medical College, St. Louis, 1897; aged 76; died, June 29, of myocarditis.

Eugene Krohn, Black River Falls, Wis.; Rush Medical College, Chicago, 1889; aged 68; died, July 11, of heart disease.

John T. Mathews, Omaha; St. Louis Medical College, 1881; aged 80; died, June 18, of carcinoma of the colon.

William Loraine Jones, Oakland, Calif.; Meharry Medical College, Nashville, Tenn., 1909; aged 58; died, May 29.

Clarence Clarke Towle, Ojai, Calif.; Jefferson Medical College of Philadelphia, 1904; aged 58; died, May 3.

Cyrus H. Barr ✦ Dwight, Ill.; Chicago Medical College, 1882; aged 79; died, July 9, of cerebral hemorrhage.

L. E. Miller, Stanberry, Mo.; Ensworth Medical College, St. Joseph, 1886; aged 69; died, May 30.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Sulphoradion.—Sulphoradion Co., Brooklyn. Composition: Essentially a thiocyanate, such as sodium thiocyanate, an iodide, such as potassium iodide, and a nitrite, such as sodium nitrite, with flavoring, sugar and water. For high blood pressure. Fraudulent therapeutic claims.—[*N. J. 20877; June, 1934.*]

Breast Tea.—E. C. Diez Co., Inc., New York. Composition: Essentially licorice root, anise seed, coriander fruit, althea root, tussillago leaves and mullein flowers. For coughs, bronchitis, sore throat, etc. Fraudulent therapeutic claims.—[*N. J. 20881; June 1934.*]

Cold Inhalant.—American Pharmaceutical Co., New York. Composition: Essentially volatile oils (about 30 per cent by volume), including menthol and lavender, and 70 per cent of alcohol by volume. Misbranded because quantity or proportion of alcohol were not declared.—[*N. J. 20885; June 1934.*]

Cal Spa Mineral Water.—F. A. Wiggins, Seattle. Composition: Water containing salts of lime, magnesium, potassium and sodium, including iodide equivalent to not more than 1.75 grains of potassium iodide per gallon. For kidney, stomach, skin and pulmonary disorders, hay fever, rheumatism, goiter, nervousness, etc. Misbranded because of false declaration of potassium iodide content and because of fraudulent therapeutic claims.—[*N. J. 20886; June 1934.*]

Felsol.—American Felsol Co., Lorain, Ohio. Composition: Essentially synthetic drugs including antipyrine, acetanilide and caffeine, an organic iodine compound and plant drugs, including lobelia. For angina pectoris, asthma, bronchitis, hay fever, etc. Misbranded because presence and quantity of acetanilide not declared, as required by law; and because of fraudulent therapeutic claims.—[*N. J. 20887; June 1934.*]

Gadoxin.—Gadoxin Co., Worcester, Mass. Composition: Pink tablets containing baking soda, flavored with wintergreen; brown tablets containing potassium iodide, cinchophen, small quantities of phenolphthalein, guaiac resin and extracts of plant drugs, including ginger and a laxative. For rheumatism, neuritis, lumbago, arthritis, sciatica, etc. Fraudulent therapeutic claims.—[*N. J. 20889; June 1934.*]

Granger Vegetable Teatonic.—DeVore Manufacturing Co., Columbus, Ohio. Composition: Laxative drugs, a bitter drug and licorice, with small amounts of iron and ammonium compounds, glycerine and water. For stomach, liver and kidney disorders, etc. Fraudulent therapeutic claims.—[*N. J. 20891; June 1934.*]

Nuran Tablets.—LaSalle Laboratories, Detroit. Composition: In each tablet acetanilide, 1.8 grains; aspirin, 3.7 grains, and caffeine, 0.25 grain. For toothache, neuritis, tonsillitis, menstrual pains, rheumatism, influenza, etc. Misbranded because acetanilide content wrongly declared and because of fraudulent therapeutic claims.—[*N. J. 20892; June 1934.*]

Frye's Hydrocarboline Spray Solution.—Geo. C. Frye Co. Portland, Maine. Composition: Essentially liquid petrolatum containing 1.5 per cent of volatile oils, including menthol, thymol, eucalyptol and wintergreen. For tuberculosis, pneumonia, bronchitis, etc. Fraudulent therapeutic claims.—[*N. J. 20893; June 1934.*]

Tan-A-Wa Tonic.—Tan-A-Wa Medicine Co., Inc., Columbus, Ohio. Composition: Essentially laxative drugs, berberis, red pepper, and a small amount of salicylate, with alcohol and water. For liver and kidney disorders and "female weakness." Fraudulent therapeutic claims.—[*N. J. 20894; June 1934.*]

Tan-A-Wa Nervine.—Tan-A-Wa Medicine Co., Inc., Columbus, Ohio. Composition: Essentially potassium bromide, ammonium bromide, sodium benzoate, valerian, sugar, water and flavoring, including vanillin. For epilepsy, "fits," nervousness, etc. Fraudulent therapeutic claims.—[*N. J. 20894; June 1934.*]

White Cross Liver Medicine.—American Drug Co., Mobile, Ala. Composition: Essentially senna leaves. For liver disorders, biliousness, etc. Fraudulent therapeutic claims.—[*N. J. 20897; June 1934.*]

Marlin Mineral Crystals.—Marlin Mineral Water Co., Marlin, Texas. Composition: Essentially Glauber's salt, with a small amount of table salt and traces of epsom salt and magnesium carbonate. For kidney and bowel disorders, rheumatism, etc. Fraudulent therapeutic claims.—[*N. J. 20900; June 1934.*]

Warner's Safe Diabetes Remedy.—Warner's Safe Remedies Co., Rochester, N. Y. Composition: Extracts of plant drugs, wintergreen, a trace of alkaloids, glycerine and water. Fraudulent therapeutic claims.—[*N. J. 20901; June 1934.*]

Blake's Herb Tablets.—International Drug Co., Boston. Composition: Extracts of plant drugs, including aloe and red pepper and a mint oil. For kidney and liver disorders, rheumatism, indigestion, etc. Fraudulent therapeutic claims.—[*N. J. 20915; June 1934.*]

Life Powder and Universal Preservation Remedy.—Clara Boerner, Paterson, N. J. Composition: Essentially powdered plant drugs, including senna leaves, licorice root and fenugreek seeds. For "bad blood," fever, kidney disorders, etc. Fraudulent therapeutic claims.—[*N. J. 20909; June 1934.*]

Parkelp.—Philip R. Park Laboratories, Inc., Chicago. Composition: Essentially plant material, containing small quantities of compounds of phosphorus, iodine, calcium, magnesium, iron, manganese, copper, sodium, potassium, aluminum and sulphur. For nervousness, anemia eczema, asthma, rheumatism, "female troubles," etc. Misbranded because amounts of minerals it contained were misrepresented and because of fraudulent therapeutic claims.—[*N. J. 20911; June 1934.*]

Lanno-Rub.—Lanno-Rub Chemical Co., Washington, D. C. Composition: Essentially 7.8 per cent of volatile oils, such as pine needle oil, eucalyptol, menthol and camphor, with glycerine, ammonium soap, fats and waxes, including lanolin, and a small quantity of borax. For hay fever, asthma, catarrh, rheumatism, etc. Fraudulent therapeutic claims.—[*N. J. 20919; June 1934.*]

Mentoil.—Mentoil Co., Fayetteville, Tenn. Composition: Essentially an oil derived from petroleum, such as kerosene, containing small amounts of camphor and menthol. For catarrh, neuralgia, sore throat, pneumonia, asthma, etc. Not antiseptic. Fraudulent therapeutic claims.—[*N. J. 20923; June 1934.*]

Kola Astier Granulated.—Gallia Laboratories, Inc., New York. Composition: Essentially sugar (97.3 per cent) and small amounts of plant material, including kola. For anemia, heart disorders, brain fatigue, old age, etc. Fraudulent therapeutic claims.—[*N. J. 20925; June 1934.*]

Nervotol.—Vitono Medicine Co., Los Angeles. Composition: Essentially compounds of lime, sodium, potassium, hypophosphites, small amounts of iron and manganese compounds, and quinine, sugar, alcohol (13.3 per cent by volume) and water. For debility, anemia, sexual disorders, "female complaint," etc. Fraudulent therapeutic claims.—[*N. J. 20927; June 1934.*]

Novolek.—Health Research Laboratories, Detroit. Composition: Essentially plant drug extracts, including a laxative drug, with baking soda, small amounts of calcium and magnesium compounds, with alcohol, glycerine, sugar and water, flavored with peppermint. For indigestion, kidney and liver disorders, rheumatism, piles, etc. Fraudulent therapeutic claims.—[*N. J. 20928; June 1934.*]

Cheney's Red Clover Flowers.—G. S. Cheney Co., Inc., Boston. Composition: Essentially red clover flower. For blood disorders, rheumatism, cancer, etc. Fraudulent therapeutic claims.—[*N. J. 20936; June 1934.*]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DINITROPHENOL AND WEIGHT REDUCTION

To the Editor:—I am entirely new to the use of sodium dinitrophenol. Two women, wives of physicians, have self administered the drug for the past five and six months with seemingly satisfying results. The elder (58 years old) has a coronary heart condition. Four times a day she takes with the dinitrophenol 1½ grains (1 Gm.) of theophyline, the latter prescribed by Dr. George Farr of Minneapolis. Of course he knows nothing about the secret dinitrophenol. She also self administered 1 tablespoonful of liquid petrolatum or something equally bland every morning before breakfast. She assures me that she has carefully checked herself during the entire six months. The only discomfort she has suffered are excessive night sweats. She is now content with her present weight (150 pounds, or 68 Kg.), a net loss of 29 pounds (13 Kg.). The younger woman now weighs 120 pounds (54 Kg.), a loss of 18 pounds (8 Kg.). Both women are 5 feet 1½ inches (155 cm.) tall. Both women are always hungry. The questions they asked me were: Can they entirely discontinue dinitrophenol without regaining fat? How small a dosage is required if any is necessary to maintain their present weight? Will the continued use, four times daily, of 1½ grains of sodium dinitrophenol alpha (Sutliff & Case Co., Peoria, Ill.) prove harmful? Anything enlightening will be gratefully received. Kindly omit name if printed in THE JOURNAL.

M.D., Minnesota.

ANSWER.—The weight of an individual, regardless of constitution, endocrine disturbance or medication, must always depend on the proportion between the energy intake in the form of food and the energy expenditure. Since the women in question have resorted to dinitrophenol, a means of increasing energy expenditure, in order to lose weight, they have probably not reduced their food intake. If this is so, with the cessation of dinitrophenol administration they would revert to their previous status. If their food intake was sufficient to make them gain weight before, they will gain weight now. If their weight was stationary before and they have not increased their food intake, their weights may remain stationary now.

If the food intake of these women was and still is excessive, the daily amount of dinitrophenol necessary for continuous use to prevent the regaining of weight depends on the amount of excess calories that are being consumed and can perhaps be

most easily determined by trial and error. Of course it might be possible to estimate the matter with a greater degree of accuracy by determining the energy output (basal metabolism plus allowances for work) and calculating the energy intake from the daily diet.

The possible harmful effects of the continued daily use of dinitrophenol for an indefinite period can only be a matter of opinion at the present state of knowledge. These women are apparently not particularly sensitive to the drug, as many people are. There are reports in the literature to the effect that rats and dogs have been given daily doses of dinitrophenol over periods of weeks and months with no demonstrable harmful effects. On the other hand, there are at least equally reliable reports which claim to have demonstrated histologic damage to liver and kidneys resulting from the use of the same drug. It should also be pointed out that there is as yet no adequate knowledge of the effects of the drug over periods of months or years.

Dinitrophenol is a potent and dangerous drug, and long continued use except from a purely experimental standpoint is probably unjustified.

GLYCINE AND EPHEDRINE IN MYASTHENIA GRAVIS

To the Editor:—For the past ten weeks I have kept a patient with myasthenia gravis on glycine and ephedrine. At present, the patient claims to be feeling entirely better. Objectively, except for a slight droop of the muscles of one side of the jaw when the patient smiles and a hypertension of 150/90 (which I attributed to the constant use of ephedrine, the patient being only 25 years of age), nothing can be found. Would you give advice as to how long the glycine (10 Gm. three times a day) and the ephedrine (three-eighths grain, or 0.024 Gm., twice a day) should be continued, and if either is to be cut down on, should the glycine because of the great expense it involves perhaps be stopped first? Kindly omit name.

M.D., New York.

ANSWER.—Most patients with myasthenia gravis have to continue taking glycine indefinitely in five or six doses totaling 30 Gm. daily. If they have had very marked improvement as a result of its use the amount of glycine taken can be gradually reduced. A few patients can get along eventually on a total of 20 Gm. and an occasional patient on even less, after about six months. However, if there is any increase in weakness on reduction of the dose, the full amount should be given again. Ephedrine in doses of 0.008 Gm. (one-eighth grain) is more frequently better than of 0.024 Gm. (three-eighths grain): one-eighth grain before breakfast, one or two during the forenoon, one or two during the afternoon and none in the evening, a total dose of between 0.024 and 0.04 Gm. (three-eighths and five-eighths grains) daily. A convenient way to use it is to have the ephedrine sulphate powder dissolved in physiologic solution of sodium chloride so that one-eighth grain is contained in a teaspoonful. A general diet should be used and if the muscles of mastication are much involved the meat or other food difficult to chew should be ground up. If there is much difficulty in swallowing, the patient should be taught how to take part of his food by a Rehfuss tube through the nose into the stomach. The patient should exercise up to the point of fatigue but never beyond.

TREATMENT OF SYPHILIS IN PREGNANCY

To the Editor:—What procedure should be followed in the prenatal care of a patient two months pregnant whose husband has had a Wassermann plus 3 reaction for seventeen years? The patient had a miscarriage eight years ago, after which she received "twelve injections of mercury and two injections of arsphenamine" from another physician. What the Wassermann reaction was at that time is not known. At present it is negative. The husband received eighteen doses of neoarsphenamine 0.6 Gm. and five injections of a bismuth compound over a period of five months in 1930 but stopped treatment because of weakness. The Wassermann reaction remained unchanged. What type, dose and frequency of administration of antisyphilitic drug is recommended for the mother in order to insure a healthy baby? Please omit name.

M.D., New Jersey.

ANSWER.—Whether or not the patient has evidences of syphilis at present, it is almost certain that she did have the disease some years ago. Undoubtedly the physician who treated her eight years ago for syphilis did so on more grounds than simply one miscarriage. On the basis of this and also the fact that the husband still has a positive Wassermann reaction, it is imperative that the patient be treated throughout her entire pregnancy. This must be done in spite of the fact that the patient herself has a negative Wassermann reaction. It may be advisable to try a Kahn or other test for syphilis on the patient. Likewise a spinal fluid Wassermann test should be made.

Care should be exercised in the selection of the drugs used for pregnant women because of the possible harm to the kidneys, especially by mercurial preparations. However, other drugs are capable of producing disturbances. Thus, the use of arsenic may lead to dermatitis and hepatitis, iodides may produce acne and irritation of the upper respiratory tract, bismuth compounds may produce the metallic line on the gums, and bismuth and mercury compounds may bring about intestinal irritation. Before treatment is begun the patient should have a careful and complete physical examination and it is most essential to examine the urine microscopically as well as macroscopically. A highly satisfactory method of treatment is to give arsphenamine intravenously, followed by mercury inunctions. The injections should be given in courses of from three to six. From one to three months should elapse between courses. During these intervals mercury should be administered in the form of inunctions. The patient may safely be given between 2 and 2.5 Gm. of arsphenamine and she may have thirty-five or more inunctions of mercury. Practically no untoward reactions should occur from this treatment. Abortion does not often result from the use of arsphenamine. Throughout the course of treatment the urine should be carefully examined at frequent intervals. Gammeltoft reported his experiences in the treatment of 1,290 syphilitic women in his hospital in Copenhagen (*Am. J. Obst. & Gynec.* **15**:747 [June] 1928). He began his treatment with an initial mercury treatment, either in the form of injections or inunctions; that is, seven inunctions of 3 Gm. Then arsphenamine is given together with the mercury treatment. Four injections of arsphenamine are given at intervals of one week, either arsphenamine in doses increasing from 0.3 to 0.4 Gm. of neoarsphenamine increasing from 0.15 to 0.3 Gm. This treatment takes from six to seven weeks. All treatment is then discontinued for a month. Then the patient is given thirty inunctions of mercury or six injections of mercuric salicylate. In the middle of pregnancy the patient is given another energetic combined treatment with mercury and arsphenamine. From eight to ten injections of arsphenamine are given altogether. Then treatment is discontinued for a month and another course of mercury is given. If labor is not due for another month the mercury treatment is again repeated.

PAROXYSMAL AURICULAR FIBRILLATION

To the Editor:—A farmer, aged 55, had the usual childhood diseases and a few attacks of malarial fever. He had influenza in 1918 for three days and recovered. He was in the Spanish-American War for two years and in 1899 noted a slight heart attack, which lasted only a few seconds. It started by hot flashes and heavy beats for a few seconds; then the heart was very irregular and the pulse fast and thready. At the end of the attack he felt a fulness on each side of the neck, as if all the veins in it were distended, and there was slight pain. Following these symptoms the heart quieted down and was apparently normal. The patient was superintendent of a coal mine from 1905 to 1930, and since then the attacks have increased in frequency and in length. About six years ago he was advised to stop smoking (cigars being the only form of tobacco used) and drinking coffee, which he did for two years with no improvement. He has been given sedatives and aromatic spirit of ammonia and amyl nitrite pearls with no improvement. The attacks continue now at irregular periodic intervals, from three to five or seven days elapsing and then two occurring in close succession. The character of the attacks is as stated. During the attacks the patient does not want food or water, but following the attack he is both hungry and thirsty. About twenty minutes after the attack begins he has a frequency of urination for about half an hour at five minute intervals and then returns to normal. The bowels are slightly constipated, but this condition yields to magnesia magma. Physical examination during an attack revealed normal temperature, irregular, weak and thready pulse, with a deficit, blood pressure 100 systolic and 65 diastolic, heart normal in size and shape, and no murmurs. Between the attacks the pulse is regular, 68 to the minute at rest, and the blood pressure is 110 systolic, 70 diastolic. This is increased slightly with exercise. The remaining physical examination is irrelevant. Blood count and urinalysis give normal results. Please give diagnosis and prognosis, suggesting a method of treatment. Please omit name.

M.D., Kentucky.

ANSWER.—A diagnosis of paroxysmal auricular fibrillation would seem to be the most likely one in this case. There is, of course, the possibility of auricular flutter with an irregular degree of block, but because of the infrequent occurrence of flutter as compared to that of fibrillation the former diagnosis is more likely to be correct. The response of the pulse to exercise during the attack would assist in differentiating between the two. With fibrillation the irregularity would remain unchanged or tend to become greater, while with flutter a faster but more regular rhythm might appear. In many instances it is impossible to distinguish between the two without a graphic record. An electrocardiogram taken during the attack should solve the problem.

In either case the prognosis is good unless the new rhythm becomes a permanent one. Under the present conditions, effort should be directed toward the prevention of attacks. Quinidine sulphate is probably the most valuable drug in the control of

such arrhythmias. As this drug is a cardiac depressant, some care must be used in its administration; but it would seem that in a sound heart such as this probably is there would be but little danger. It is customary to test the patient for idiosyncrasy to the drug by the initial administration of 0.1 Gm. by mouth. If no untoward symptoms appear in the next twenty-four hours, 0.1 Gm. three times a day may be given. If the attacks continue, the dose may be increased 0.1 Gm. each day, each increase to remain unchanged until it is discovered that the attacks still persist.

A daily dose of 2 Gm. of quinidine is quite safe with a normal heart. Much larger doses have been given. It is desirable, however, to keep the dose at the lowest possible level that produces the desired result.

In addition to the drug therapy the gastro-intestinal tract and the genito-urinary tract should be carefully examined for pathologic changes that may be responsible for the occurrence of these attacks. It seems unlikely, however, that any serious disorder could have existed for the past thirty-six years without detection.

DEFORMITY OF RECTUM WITH PAIN AFTER REPEATED INFECTION

To the Editor:—I have a patient whose case was diagnosed as rectal neuralgia by a Dallas specialist several years ago. He says that he has continuous pain in the distal portion of the rectum and anal canal as though his bowels should move all the time. He has exacerbations lasting two or three days, during which he aches all over and this condition will be followed by periods of comparative relief lasting several weeks to a month or more, during which he gains weight and feels fairly well. He is worse during periods of constipation. Some time ago he had a dull pain in the left testicle and along the cord through the inguinal canal. He also is bothered at times by pain in the left posterior part of the muscles of his neck. This was more of the nature of a "stiffness" than a pain. At times he has dull headaches, and pains in the extremities. During exacerbations he has trouble with his stomach, consisting of pain in the epigastrium relieved by soda and belching. He says that he does not know whether the rectal trouble causes the stomach trouble or the stomach the rectal trouble. The pain in the epigastrium almost always occurs from one to two hours after meals but sometimes at night. He passes much gas. His present trouble began about five years ago. He had had hemorrhoids for two years and bled occasionally when constipated. About 1925 a penile discharge developed that was diagnosed as gonorrhea. He was working in an oil field as a tool dresser at the time and the diagnosis was made by a doctor who was probably a quack. He had little discharge. While receiving treatment for the gonorrhea, he noticed the peculiar feeling in the rectum. He was using a white medicine that caused severe burning and was followed by the desire to defecate. This was later followed by the continuous desire to defecate, which is not relieved by defecation. He had hemorrhoids removed in 1932 and had relief for a month. Then he saw a rectal specialist in Dallas in 1933 and the condition was diagnosed as rectal neuralgia. He was given a few rectal treatments with rectal electrodes and this made him worse. Then he went to a clinic, where an ulcer was found. Within a month after leaving the clinic he was worse than before, though he had been much improved. Slight labor makes him nervous and shaky and he tires easily. Last fall he was relieved for several months and gained 10 pounds (4.5 Kg.). He has lost most of this again. The entire anal canal and rectum are inflamed, the distal portion of the rectum and the region immediately above the internal sphincter being markedly inflamed. No ulcers could be found and no hemorrhoids, but several tags. The left side immediately above the internal sphincter was worse, but no ulcer was visible. The Wassermann reaction was negative last year. Hemoglobin is 90 per cent. The urine is normal. The blood pressure is 120 systolic, 82 diastolic. I will greatly appreciate any suggestions that you may offer and I will try to supply any information you may think desirable. Please do not use my name.

M.D., Texas.

ANSWER.—It is not unusual for such conditions to develop in patients who have undergone similar experiences. It is doubtful whether they ever recover entirely from the discomforts. The disorder can hardly be called a neuralgia when there is so much to account for the dysfunction and discomfort. The trouble is, no doubt, due to the distortion that has developed during the years the patient has been receiving treatment. Recurrent breaking down of tissue with subsequent healing has produced a deformed, scarred and infected rectal outlet. Contraction may be associated. The inflamed tissues are sensitive and the bowel discharges cause discomfort and urgent desire to defecate.

It is doubtful whether any treatment is curative. The best results are usually obtained by the simplest palliative therapy. The patient should use hot irrigations (not enemas) at a temperature between 105 and 110 F. daily following the movement of the bowel. This may be followed by irrigations with witch hazel (undiluted); then phenolated or white petrolatum may be used to lubricate and soothe the anal margins. Such treatment will probably relieve the symptoms a great deal, but this relief may exist only temporarily. The same treatment may be necessary at intervals for an indefinite period.

GOLD PREPARATIONS IN SNAKE BITE

To the Editor:—In Queries and Minor Notes in THE JOURNAL, June 23, page 2130, it says that in snake bites injections of gold and mercury salts are useful. What dose of gold sodium thiosulphate would you use? What salts of mercury are used? What dosage? Also, would you use them intramuscularly, subcutaneously or intravenously? Please omit name.

M.D.

ANSWER.—Experimental results with snake bites have shown that the heavy metals, such as gold, mercury or zinc, give better results than the oxidizing agents such as the permanganates. However, to obtain any decisive result the metal in full dose must be injected at the site of the bite before a lethal dose has entered the circulation; i. e., within fifteen minutes of the accident.

Most of the heavy metals used therapeutically are put up in ampules for intramuscular injection, such as gold and sodium thiosulphate, and mercuric salicylate in oil. Many preparations of these and other heavy metals might be available for injection if carried in a first aid package.

The injection should circumscribe the bite both subcutaneously and intramuscularly. The amount of drug injected into the subcutaneous tissues should be well distributed, so that tissue necrosis may not occur. Naturally the technic of injection is important so that the drug may be well distributed and the full dose used. Intravenous injection would not be employed.

Practical use has permitted larger doses than given in most handbooks of materia medica. In a life saving injection, some chances might be taken in giving a maximum dose.

Gold sodium thiosulphate has been given for other conditions in doses of from 0.0013 to 0.016 Gm. ($\frac{1}{50}$ to $\frac{1}{4}$ grain) to children and from 0.02 to 0.04 Gm. ($\frac{1}{3}$ to $\frac{2}{3}$ grain) to adults by injections. Gold chloride used in full dose of from 10 to 15 drops of a 1 per cent solution has been injected at the site of the snake bite with good results.

EXOPHTHALMOS AFTER THYROIDECTOMY

To the Editor:—A man, aged 45, had a thyroidectomy eight years ago for a severe exophthalmic goiter, with marked exophthalmos and heart disturbance. He has been well since that time except for a considerable degree of exophthalmos and a rapid heart. Last fall he began to feel poorly, to fatigue easily and to lose weight. He is becoming progressively worse. There is no indication of diabetes, nephritis or any blood disease, and no sign of an obvious malignant condition. His lungs are clear and he has no fever. His heart rate is rapid, about 90 per minute. He has a fine tremor and a throbbing apex beat. His wife feels that there is now more exophthalmos than a short while ago. He has a good appetite, eating a large amount of food, but in spite of this he continues to lose weight. He appears to give off a large amount of body heat and his skin is always hot and the color is good in spite of a slight anemia. In November his basal metabolism rate was normal. Is it possible that he is having a recurrence of his exophthalmic goiter? Will a negative basal metabolic rate, if repeated, entirely rule this out? How frequent are relapses into hyperthyroidism after thyroidectomy? Will a course of compound solution of iodine be of value diagnostically? How much would you give? Kindly omit name.

M.D., Michigan.

ANSWER.—Marked exophthalmos, especially if of long standing, rarely recedes to an entirely normal state following subtotal thyroidectomy for exophthalmic goiter; some degree of exophthalmos usually remains. In fact, exophthalmos may persist or indeed first be noted after operative intervention when other manifestations of the disease may appear to be controlled. This is ascribed to damage of the rectus muscles of the eyes by some, and to a sympathetic nervous system effect by others.

The persistence of rapid heart action after thyroidectomy may indicate that the operation was not successful in controlling the disease, or frequently enough it may be an expression of permanent myocardial damage, the effect of long continued hyperthyroidism, which would not be influenced by the operation. Tremor, tachycardia, a hot skin, increased appetite, loss of weight and an increase in exophthalmos, taken together, suggest a continuation of the disease following operation in this instance, even though a single metabolic rate is reported as normal. The test should be repeated.

In general, thyroidectomy by an experienced surgeon during the early months of exophthalmic goiter is effective in stopping the progress of the disease. The surgeon acts on the conception that the thyroid is an essential link in the chain which produces hyperthyroidism. Removal of the greater part of the thyroid will in most instances reduce the metabolic rate and the clinical manifestations roughly in proportion to the amount of thyroid substance removed. This is one of the good therapeutic procedures for the control of a major illness which is available in the field of medicine. It is well known, however, that a subtotal thyroidectomy is not a true cure for

exophthalmic goiter. Certain clinical phenomena such as exophthalmos, tremor or tachycardia, as noted in this patient, may make their first appearance or increase following subtotal thyroidectomy, even though other manifestations may seem to have been controlled.

In the case cited it would appear reasonable to suppose that hyperthyroidism has not been controlled by the surgical procedure and is continuing, that a considerable amount of active thyroid substance remains, and that the condition may respond to further surgical intervention. The administration of compound solution of iodine under careful observation at this time may effect a considerable amelioration of the symptoms. If such a favorable result is observed, that in itself may be taken to indicate that the present symptoms are caused by a continuation of hyperthyroidism and a second operation under iodine control, for the removal of thyroid remnants is a logical procedure. From 0.6 to 1 cc. of compound solution of iodine three times daily would be adequate and may be given over a period of several weeks; the exact dose is immaterial. However, a permanent control of hyperthyroidism by iodine therapy may not be expected.

SCOLIOSIS AND PELVIC TILT WITH PAIN IN RIGHT CALF

To the Editor:—A man of 72 complains of a neuritic type of pain in the right calf, worse on weight bearing. Examination two months ago revealed 4 inches shortening of the left leg, with the classic observations and history, with onset at the age of 4 of tuberculosis of the left hip (quiescent). General physical examination was otherwise negative, save for a moderate compensatory scoliosis of the spine. The patient walks with a cane. Neurologic examination was negative; the urine was normal; the blood Wassermann reaction was negative; the prostate was of normal size and consistency. Roentgen examination revealed two devitalized teeth, each somewhat infected. In addition, one third molar, completely unerupted and upside down, was seen, with no evidence of infection or crowding seen. One of the dead teeth was extracted immediately, the other two weeks ago. The man is still suffering considerable pain. Present treatment consists chiefly of rest in bed with a little acetylsalicylic acid occasionally. An internist, who has seen this patient with me, and an oral surgeon insist that the third molar should come out, admitting that there is no evidence of infection or crowding. The argument presented seems to be "impacted teeth often cause trouble." Do you consider the scoliosis as possibly the cause of the pain? Do you believe that a completely unerupted third molar, free of infection and alive, the removal of which is obviously a major operation, should be removed in a man of 72, even if his general health and vascular system are very good? Please omit name.

M.D., Indiana.

ANSWER.—There would seem to be a pelvic tilt in this case. It is not a "compensatory" but a postural scoliosis. The patient should not use a cane but two crutches instead. If the scoliosis is the cause of the pain, it should be relieved considerably by rest in bed. It is well known that, in cases of amputation of one leg, flatfoot develops on the other side frequently. Roentgenograms should be made of the lumbosacral and sacroiliac joints for evidence of infection, such as arthritis or tuberculosis. Foci of infection such as occur in the prostate and genito-urinary tract should be investigated, as well as metabolic disturbances. Spinal cord tumor cannot be ruled out except by careful and minute neurologic examination. The tooth is probably the least important factor at the present time. One would suggest caution in removing the unerupted third molar in a man of 72 years. Rest in bed is recommended, with pelvic and leg strapping; later on a removable pelvic support may be worn, and taken off for physical therapy including radiant heat, massage and diathermy. The pelvis must be balanced for sitting and standing postures.

POSSIBLE INTERMITTENT CLAUDICATION

To the Editor:—I have a patient who complains of pain in the calf of the leg on walking any distance. He is a bartender and can stand all day and walk up and down behind a bar without any trouble at all. His arches are normal. His blood picture is negative. He has no varicose veins. I can find nothing to account for such a condition. His cramplike pains are very severe, requiring him to sit down after walking any distance from a quarter of a mile up. Please omit name.

M.D., Massachusetts.

ANSWER.—This is evidently a case of so-called intermittent claudication, which is a symptom of a peripheral vascular disturbance and should not be considered a diagnosis.

There is a neurocirculatory element underlying the condition, possibly located in the sympathetic nervous system. The myalgia is secondary. The muscle hypertonicity and the neurocirculatory disturbance create a vicious circle.

Some authorities believe that muscle spasm is on the basis of calcium deficiency. Intermittent claudication is the result of arterial spasms and not really a disease entity, but it may develop in the course of any one of several arterial diseases, such as arteriosclerosis, thrombo-angiitis obliterans, traumatic arterial diseases, aneurysms, syphilitic arteritis of the extremities, periarteritis nodosa and acute arteritis.

Special significance is attached to the symptom of intermittent claudication because it may be an early sign of threatening gangrene, which by proper treatment may be prevented or at least postponed. It should be considered a danger signal.

There are some contributing factors, such as excessive use of condiments, overexertion, traumas, infections, exposure to cold and particularly nicotine. It is not so much that these patients are heavy smokers as that they are susceptible to nicotine.

Intermittent claudication is often erroneously diagnosed as flatfoot, neuritis, muscular rheumatism, gout, varicose veins and periostitis.

It is not stated whether the symptoms are unilateral or bilateral, nor is one told whether the dorsalis pedis pulse is palpable. Oscillometer readings should be made.

One of the reasons the patient is able to go on with his work is that there is a frequent change of position and he is able to walk a little and rest a little.

It is impossible to say that there are no varicose veins. One may say that there are no superficial varicose veins, because there is an important group of deep veins which may be dilated without superficial evidence.

In addition to roentgenograms of the legs to demonstrate or rule out arteriosclerosis, the patient should have a careful examination for mechanical defects of the feet, such as flatfoot and a short achilles tendon. A casual glance does not rule out a potential defect.

There are various measures which should be considered for this patient, including discontinuance of tobacco in all forms, ingestion of large amounts of fluid such as Willy Meyer solution and alkaline waters, the electric baker, and diathermy to the lumbar sympathetics.

Postural exercises, recommended by Buerger, Allen and others, are helpful. The use of theobromine sodiosalicylate, 0.3 Gm. three times a day is of value in some cases. Intravenous saline solution has been highly recommended.

SEVERE CONSTIPATION OR HIRSCHSPRUNG'S DISEASE

To the Editor:—A boy, aged 5 years, suffered from constipation all his life. No stool was passed without huge doses of purgatives or an enema. The usual symptoms of constipation were present. He urinated frequently and dribbled when excited. He wet the bed every night. He slept poorly. When first seen the entire colon was filled with a lumpy mass; tumor was considered, but the history indicated a loaded colon. Two tablespoonfuls of castor oil every four hours were ordered; twelve tablespoonfuls were required to empty the bowels. Next day the "tumor" had disappeared. Urinalysis showed only indican. The tonsils were much enlarged but sore throat was rare. Phimosis with adhesions existed. The hemoglobin was 75. The child had pot belly. Otherwise the examination gave negative results. A laxative diet was outlined with much fat. Regular meals and rest were advised. Exercise, including somersaults twice daily, were ordered. Atropine sulphate was prescribed, increasing daily to tolerance. A purgative capsule with iron and ammonium citrate three times a day was given. The hemoglobin and kidneys are better but the constipation is not.

C. W. HARPER, M.D., Kings Mountain, N. C.

ANSWER.—An obstipation of the degree described in this case is indeed rarely seen. The average adult dose of castor oil is from 15 to 60 cc. and a five year old boy weighing in the neighborhood of 40 pounds (18 Kg.) certainly would under normal circumstances require no more than one or two teaspoonfuls for adequate evacuation of the bowels. The twelve tablespoonful dose required to move the bowels in this little boy allows one to visualize the degree of his constipation. If the rectum and sphincter are functioning normally he must be suffering from some malformation of the colon. Stenosis and atresia of the large intestine may occur, though these are much less common than in the small bowel. Congenital idiopathic dilatation of the colon, known as congenital megacolon or Hirschsprung's disease, could well be the etiologic basis of the constipation in the case described. This condition may be caused by an increased length of the mesentery, permitting twisting of the intestine with a partial occlusion. It may be due to changes in the nerve endings of the muscle wall, causing a paralysis of a segment of the colon. More frequently the condition is due to a congenital anomaly in the development of the colon, and the hypertrophy of this organ may have existed in the fetal intestine before birth. These cases present a history of constipation since birth, increasing in severity with the age of the child. There are instances reported in which no bowel movement has occurred in weeks or even months. In many instances an enema following a prolonged

period of constipation will produce a stool that would fill half a pail. After the passage of such a movement the abdomen becomes flaccid. Cathartics seem to have little or no effect on this condition. Recently it has been thought that there may be a congenital imbalance between the sympathetic and parasympathetic nerves, innervating the colon. This has led to a therapeutic sympathectomy for the relief of the condition. The inferior mesenteric plexus and the sacral plexus have both been sectioned in the relief of this condition and good results have been reported from such procedure. A barium enema is a valuable aid in outlining the colon and would prove of interest in the case here described.

BRONCHOPNEUMONIA OR TUBERCULOSIS COMPLICATING MEASLES

To the Editor:—Recently I have seen two children, both 5 years of age, who developed pneumonia following measles and died from the pneumonia after from fourteen to twenty days. Neither child after the initial stage of the pneumonia had much elevation in temperature. Both mothers were known to be actively tuberculous and in both instances I have suspected tuberculosis. In one child I had roentgenograms made which could not be definitely labeled tuberculous. What would have been the practicability of a tuberculin test, its value and the advisability of administering it? Neither of these cases seemed to fit into that of just an ordinary bronchopneumonia, and I have tried to find discussion on such but have failed.

C. E. HOLLEMAN, M.D., Winston-Salem, N. C.

ANSWER.—Bronchopneumonia and tuberculosis are among the more frequent sequelae of measles. Onset of bronchopneumonia usually takes place a few days after appearance of the rash, though it may occur in the prodromal stages or during convalescence. The usual duration of such pneumonia is from a week to ten days, and the temperature varies with the severity and extent of the pneumonic process. Chronic pneumonia, which runs a protracted course of many months, may follow measles. Measles is also credited with arousing into fresh activity a dormant tuberculosis. During an attack of measles the cutaneous response to a tuberculin test that has previously been positive may become negative, and the test may not become positive again till some time after convalescence. This depression of the tuberculin test during measles was termed anergy by Pirquet. Similarly it is known that the Wassermann reaction in a case associated with measles may become negative during the morbillous eruption and positive again after the measles rash has faded. A positive Widal reaction may become negative during an attack of measles. A depression of the skin response to tuberculin during the acute stage of other infectious diseases also may occur. In the cases under consideration, in which both mothers were known to be actively tuberculous, one would be forced to suspect strongly that the measles in these children had reactivated a dormant tuberculosis. Had a tuberculin test been performed during the acute stage of measles, a negative reaction would have been of little value in aiding the diagnosis. The tuberculin reaction is often depressed in fulminating types of tuberculosis in childhood, especially in the late stages of a miliary tuberculosis.

EFFECTS OF BRAN ON GASTRO-INTESTINAL TRACT

To the Editor:—One of my patients has asked me the following problems, the answers to which I have been unable to find in my references: Is bran injurious when used in the treatment of constipation other than the spastic type? Has it been necessary in certain cases to resort to surgical measures to relieve obstructions caused by bran? Are there laws regulating the sale of bran products because of these dietary dangers? Please omit name and address.

M.D., Pennsylvania.

ANSWER.—Bran can be injurious in any type of constipation. The old textbook division of constipation into spastic and atonic varieties is not justified by the facts, because almost all constipated colons appear to be spastic. Some persons who have constipation, with a powerful digestion and no tendency to flatulence, can be greatly benefited by the addition of bran or other indigestible material to the diet, while patients with a weak digestion and a tendency to flatulence are likely sooner or later to get into trouble on any rough bulky type of food. The frail bowel cannot handle it. Answers to a questionnaire (Alvarez, W. C.: Opinions of 470 Physicians in Regard to the Advantages and Disadvantages of Using Bran and Roughage, *Minnesota Med.* **14**:296 [April] 1931) indicated that the medical profession is anything but enthusiastic about bran. Most of the men who answered said that they no longer prescribed it, and many warned their patients against its use on account of the indigestion it often produces. This does not mean that the substance is always harmful and should never be prescribed. What it means is that it should be prescribed with discretion in certain types of cases, and always the patient and the physician should know enough to stop the use of the substance as soon as discomfort appears.

Alvarez reported the case of a woman who began the use of bran and in the succeeding four months went downhill until she was skin and bones. In her attempt to relieve the distress in the bowel, she gave up one food after the other until she was living on little besides bran. It never occurred to her to drop that, because she had been led to believe that it was a wonderful health food. In a few cases, bran or any other indigestible material used for the treatment of constipation will pack and cause more or less intestinal obstruction. Alvarez reported a case in which loops of bowel kinked and narrowed and were bound down to the stump of an amputated uterus because packed solidly with bran, so that the patient had to be operated on. In the case reported by Murray B. Davis (Intestinal Obstruction from Eating Bran, THE JOURNAL, July 4, 1931, p. 24) there was no mechanical narrowing to account for the intestinal obstruction, which had to be relieved by operation.

Manufacturers should warn buyers that not every one can tolerate the substance and that its use should be stopped the minute it begins to produce indigestion, flatulence and malnutrition.

CARBOHYDRATES AND BODY ACIDITY

To the Editor:—There seems to be an impression among the public that taking carbohydrates causes an acid condition of the blood: not the physiologic carbonic acid but uric acid and the purine group. Can you tell me what the basis is for this widespread belief and what are all the acids that can be formed from the carbohydrates with the exception of the carbonic acid, if any?

SWITHIN CHANDLER, M.D., Philadelphia.

ANSWER.—The chief acid that may be formed from carbohydrate in the body is lactic acid. However, the acidosis that may occur from the excessive use of carbohydrate foods is not due to the production of this or any other acid from the sugar. The belief may depend on the fact that most high carbohydrate foods of the artificial and refined types are lacking in the basic elements. These basic ions, such as sodium, potassium and calcium, are necessary for the neutralization and excretion of the various acid waste products of the body. Hence carbohydrates may be implicated in the occurrence of such an acid state by displacing other necessary food products from the dietary.

EFFECTS OF DIATHERMY

To the Editor:—Is there any danger in diathermizing a patient for 1,000 hours? This is the number of diathermy hours Dr. X of the city of B. gave to a patient for his sciatica, three hours a day for a period of almost a year. The following is a copy of Dr. X's letter to me: "Will you kindly inform me as to what pathological conditions may occur from diathermy treatments given over an extended period of time in the organs, fluids or other parts of the body, either grossly or microscopically, or any functional symptoms? As far as my experience or knowledge goes I am unaware of any such results. Among my patients, I have come across some who have taken treatments in the City Hospital of B. for more than seventeen years without suffering any apparent ill effects from diathermy (or other modalities). As I am much interested in that question I would greatly appreciate any information to the contrary you can give me as a result of your knowledge and experience." My opinion is that diathermy should not be used indiscriminately. However, I have never encountered any pathologic condition caused by the injudicious employment of this modality, though I did not come across patients getting such treatment by the thousands. Would you kindly advise in THE JOURNAL as to the possible dangers of such heroic diathermy treatments?

JOSEPH ECHTMAN, M.D., New York.

ANSWER.—Authoritative opinions are agreed that diathermy is a triple edged agency by means of which stimulating, depressing and lethal effects may be evoked, depending on such factors as the length of time required for treatment and the intensity of heat produced. This is based on laboratory evidence showing that the degree of heat saturation differs with the size and resistance of tissue, the size of electrodes and the amperage imposed on it. For medical purposes from ten to forty-five minutes is generally sufficient for the heating of hands to the heating of the thorax or pelvis. To extend the treatment beyond that period is of no physiologic value, because of the depressing action that follows. During the latter stage the patient becomes irritable and restless and is covered with perspiration. If treatment is prolonged, the active hyperemia and the systemic fever influence the body function and provoke a depressing effect on the circulatory apparatus, the general metabolism and the chemical constituents of the body. It is known that only selected cases can withstand the effect of hyperpyretic treatment, these requiring a limited number of treatments to produce the effect desired. Prolonged and daily treatments as described are undoubtedly subhyperpyretic in

action, the constant drain or insult of which tends to produce changes in hydrogen ion concentration, the blood volume, the muscle, nerve and circulatory apparatus, and the secretion of the internal organs. Since no such untoward effects are mentioned, it is reasonable to assume that the dosage was below the minimal range required for the relief of symptoms. It is worth reemphasizing that, if diathermy does not offer some relief within the first few treatments, any number of consecutive treatments will not benefit the patient. Further treatments only shatter the faith of the physician in the established physiologic effects of diathermy and tend to make the patient more skeptical as to the value of any portion of physical medicine.

INCREASING VISCOSITY OF FECES

To the Editor:—I am interested in increasing the viscosity of the content of the large intestine. I have thought of bismuth subnitrate, agar-agar, psyllium seed and acacia. Please inform me what the efficient doses will be to use and which substances you think best for my purpose. What other substances can I use with the same object? How can I estimate the viscosity of the intestinal content, it being known that I can get it through a colic fistula? What method would you suggest for its measurement? Can you give me some references concerning this problem? Please omit name. M.D., Maryland.

ANSWER.—Apparently the inquirer is interested in drying up and making more viscid the feces coming through a colostomy. In such cases the addition of bulk producers, such as agar, psyllium seed and acacia, would only add to the patient's distress. The feces might be more viscid but they would also be more voluminous and their escape harder to control. Bargen, whose experience in the care of colostomies is large, finds it most helpful to dry the feces with powders such as bismuth subnitrate, tribasic calcium phosphate and kaolin. His favorite is bismuth subnitrate, in heaping teaspoonful doses three times a day. He has not had any trouble with nitrite poisoning. At times, when the stools become too soft, it is necessary to give, in addition, an occasional teaspoonful of camphorated tincture of opium. The use of fluids should be restricted and it would probably help to take only two meals a day. A diet for patients with colostomy is described in an article by Bargen and Victor (Diet in Intestinal Disorders, THE JOURNAL, July 18, 1931, p. 151).

ANTISEPTICS IN SINUSES

To the Editor:—Please inform me as to the best antiseptics for irrigation and instillation in chronic maxillary sinusitis, the infecting organism being of the mixed respiratory variety. Please omit name and address. M.D., California.

ANSWER.—It is doubtful whether the use of antiseptics for irrigation or instillation in cases of chronic maxillary sinusitis has any definite or lasting effect. If concentrated solutions of germicides are employed, probably more damage ensues to the ciliated epithelium of the mucosa than to the offending bacteria. However, the use of dilute tincture of iodine or silver nitrate solution, one of the organic silver preparations or one of the organic mercurials, may give temporary relief, especially in acute exacerbations. But when the antral mucosa shows polypoidal changes, no irrigations will avail. Proper drainage is essential and if this does not suffice, some form of radical operation is often indicated in chronic maxillary sinusitis.

CHRONIC PERITONITIS AND PERIHEPATITIS—CONCATO AND PICK DISEASE

To the Editor:—My question to you is prompted by an argument that arose during one of our staff meetings between Dr. A and Dr. B. Dr. A contends that Concato's and Pick's diseases are absolutely identical and that the terms may be used synonymously. Dr. B contends that this is not so; that while the two diseases closely resemble each other in clinical and pathologic manifestations, they are two separate disease entities, it being his opinion that Pick's disease begins as a pericarditis, whereas Concato's disease does not necessarily begin with pericardial involvement and frequently the etiology of it is tuberculosis. A number of local pathologists have sidestepped the question as to whether the two diseases are identical. PAUL MURPHY, M.D., Koch, Mo.

ANSWER.—There is much confusion in the literature in regard to the group of conditions described under the general terms of chronic peritonitis and perihepatitis. Adami uses the term Concato's disease as a synonym for chronic multiserositis or polyorrhomenitis and calls it a "form of chronic mediastinal inflammation which is of a steadily progressive character." It may begin, according to Adami, either as a perihepatitis extending to the mediastinum by the lymphatics involving in its course the right pleura, or as a pericarditis. The adhesions produced are numerous and dense. The newly formed fibrous tissue may undergo hyaline changes, so that a substance of pearly white character and cartilaginous appearance is produced. This frequently is formed on the surface of the viscera, particularly the liver, spleen, lungs and heart. In regard to the liver, the term applied by Curshmann was "zuckerguss leber."

Pick in 1896 described a group of cases under the title of pericarditic pseudocirrhosis of the liver, occurring in young persons with latent adherent pericarditis and ascites. As the result of the chronic progressive inflammatory process the pericardium became thickened and fibrosed, and constricting bands caused obstruction to the vena cava with resultant engorgement of the hepatic veins and the liver, which in turn became fibrotic and ascites followed. This was the predominant feature. Peritoneal involvement was thought to be a minor part of the picture, the result of possible direct extension of inflammation from the pericardium.

Both of these descriptions exclude tuberculosis. If these conditions are not identical, they are nearly so, and probably represent a syndrome rather than a definite disease entity. The condition is not particularly unusual and was first described in 1847 by Van Deen. Since then many observers have commented on various features of the conditions, including Curshmann, Nicholls and Kelly. The apparent variation in the evolution of the disease has led to the confusion of terms applied, as well as the point of view of the observer. The pathologic and clinical features are in the main essentially the same regardless of the term applied. In addition to those of Pick and Curshmann, chronic hyperplastic perihepatitis, chronic deforming perihepatitis, capsular cirrhosis of the liver, multiple serositis, polyserositis, and multiple progressive hyaloserositis have been used by various other authors.

INSULIN IN CARCINOMA OF TONSIL

To the Editor:—I have a patient, a man, aged 67, with moderately advanced carcinoma of the left tonsil, and marked involvement of the cervical lymph nodes. Of course, the condition is inoperable and not amenable to irradiation. A consultant has advised the hypodermic injection of 4 units of insulin daily, stating that he has seen marked shrinkage of the growth in similar cases by such treatment. I have never heard of this mode of treatment. Will you kindly advise me as to whether or not there is any evidence to support the contention of the consultant? Would you advise such treatment? If so, should injections be given in the growth itself or merely subcutaneously? I will appreciate an early reply, as my patient is anxious to begin treatment as early as possible if there is any hope of a palliative result. M.D., Florida.

ANSWER.—Dr. S. M. Beale of Sandwich, Mass., recently read a paper before the American Laryngological, Rhinological and Otological Society at its session in Charleston, S. C., in which he reported a great improvement in a number of cases of carcinoma and recommends highly an injection of from 3 to 4 units of insulin daily. A communication addressed to Dr. Beale, requesting full details as to the method of using insulin, will undoubtedly receive courteous attention. It will, of course, take long and careful study, with a large series of cases as controls, to determine definitely just how far insulin is of value in cases of malignant neoplasm.

GASEOUS DISTENTION OF BOWEL

To the Editor:—A woman about 60 years of age has had four children (the youngest is 25 years old). She never had any sickness except that she was always nervous; she has had hysteria since childhood. The heart, lungs, liver and kidneys all seem normal. About three years ago she noticed that she was troubled with gas after meals. At first an eructation of mild, odorless and tasteless gas was noticed. Later she expelled gas by the bowel and also belched. Now her abdomen, especially the lower part, is distended all the time, sometimes enough to be painful. She has seen many doctors and she has been given acids by some and alkalis by others. She has been dieted until she is much underweight, but nothing has given her any relief from the gas. She sees no difference in her condition when she diets and when she does not. She says that possibly potatoes make her worse but she sees very little difference in other foods. M. C. JOHN, M.D., Stuttgart, Ark.

ANSWER.—The data submitted are inadequate to form a basis for any opinion. The statement of nervousness and of the patient having had hysteria since childhood are ambiguous without a description of her symptoms and psychic reactions. The few points mentioned might be referable to a cholecystitis with or without calculi, cathartic colitis, irritable colon or carcinoma of the colon, beginning carcinoma of the pancreas or pancreatitis, some form of gastro-intestinal allergy or many other conditions not necessarily affecting the gastro-intestinal tract. Without a more detailed history, laboratory tests including gastric and stool analyses, cholecystography and a complete roentgenologic study of the gastro-intestinal tract, no definite conclusion can be reached.

CYSTADENOMA OF OVARY

To the Editor:—A woman, aged 27, married five years, without children, had an appendectomy seven years ago and scarlet fever six years ago. Last April she noticed a mass in the lower part of the abdomen, which gradually became larger. In July 1933 she was operated on. Operation revealed a large papillomatous cyst, with several daughter cysts involving both ovaries. A portion of the left tube was so friable that it crumbled in the surgeon's hand. Both ovaries and the left tube were removed. The diagnosis was bilateral malignancy of both ovaries. Since operation, the patient has had the usual symptoms of the surgical menopause but complains of occasional pains in the abdomen like a "belly-ache." She has gained 10 pounds (4.5 Kg.) since the operation. She has had no high voltage roentgen therapy. What is the prognosis? What is the possible expectancy of life? Is a cure possible with the surgery performed? Please omit name.

M.D., Michigan.

ANSWER.—This case is evidently one in which there was a primary papillary cystadenoma of the ovary with malignant degeneration. Even if all the grossly evident ovarian growth was removed there is little hope of a permanent cure without coincident removal of the body of the uterus. Intensive high voltage roentgen therapy is of considerable value.

Ovarian metastases from extension of adenocarcinoma of the body of the uterus may also produce cystic papillary tumors of the ovary. In these cases the prognosis is not as good.

Primary cystic carcinoma of the ovary also resembles cystadenoma of the ovary with malignant degeneration. In these cases the progress is still less favorable.

EFFECTS OF MERCUROCHROME ON CERVIX

To the Editor:—Is there any danger in the application of 2 per cent solution mercurochome to the cervix about one time weekly in an effort to prevent conception? In the case in mind this has gone on for three years and the cervix is in excellent condition, but if this continues do you think there is any likelihood of the mild irritation causing a malignant condition? Please omit name.

M.D., Louisiana.

ANSWER.—Mercurochrome in the ordinary strength cannot be compared to iodine as a contraceptive measure, since it has little effect on tissue cells and it is doubtful whether it would inactivate spermatozoa. As this antiseptic, in strengths of from 2 to 5 per cent, is commonly used for the treatment of vaginal and cervical irritations, there is no reason for believing that the use as stated would ever cause any type of cervical irritation.

UNDERDEVELOPMENT AS AN ENDOCRINE MANIFESTATION

To the Editor:—I am puzzled as to the diagnosis and treatment of a case. A youth, aged 16, 5 feet (152 cm.) tall and weighing 90 pounds (41 Kg.) has immaturely developed secondary sex characteristics, a small penis and no axillary or pubic hair. His mother states that he stopped growing several years ago and since has complained of nervous spells. These come on especially at night and also during the day following severe physical exertion. The spells are acute, last about fifteen minutes and are characterized by a feeling of dizziness over the frontal area and occasional neuralgic pains over the left frontal and temporal regions. The boy otherwise is in good physical condition and examination of the heart is negative during these attacks. I have given him phenobarbital and anterior pituitary by mouth with no relief. What therapy and methods of diagnosis would you suggest? Would a Wassermann test be indicated? His past history and the family history are grossly negative. Kindly omit name.

M.D., Ohio.

ANSWER.—In the history of this case, the essential points of which are the stationary development, the nervous spells with dizziness and pain over the frontal and temporal regions, a thorough neurologic examination would seem indicated, as well as an examination of the eyegrounds. A tumor of the brain involving the hypophysis and causing inactivity of this gland might account for the stunted growth and retarded sexual development. The side effects of a tumor causing atrophy of the hypophysis would be manifested by an increased pressure on the optic tracts causing narrowing of the field of vision, choked optic disk, retinal changes, headache and dizziness. A roentgenogram of the skull to visualize the sella turcica might be a valuable aid in determining the presence of a hypophyseal tumor. Hypopituitarism, from whatever cause, may result in retardation of growth and sexual development. There are two chief groups of preadolescent hypopituitarism. One type is characterized by a weak, delicate, undersized, dwarfed individual with absent secondary sex characteristics. This is the Lorain-Levi type. In contrast is the Fröhlich syndrome, in which adiposity to a considerable degree is a marked feature—the so-called dystrophia adiposogenitalis. Hypofunction of other endocrine glands, such as the thyroid and pineal, and, according to some, pluriglandular disturbance may cause retardation of growth. With a disturbance in one gland there may be secondary disturbance in other glands. Congenital syphilis may cause retardation in growth and development and it would therefore be well to perform a Wassermann test. It would be interesting to note whether the testes were descended, as this might have some bearing on the sexual retardation. Recently, treatment of sexual underdevelopment in boys has been attempted with the anterior pituitary-like principle from the urine of pregnancy. This substance seems to be of value as a human gonad activator, and good results have been reported from its use. The dosage and duration of treatment are dependent on the degree of underdevelopment and age of the patient. It has been found that patients who are treated early in adolescence respond more favorably to this substance.

SCARLET FEVER IMMUNIZATION

To the Editor:—How would you suggest that I proceed to desensitize a 5 year old girl for scarlet fever prophylactic doses? She had gradually increased reactions to the first, second and third doses of Squibb's scarlet fever antigen and I am loath to proceed until less sensitivity is exhibited. Please omit name and address.

M.D., Ohio.

ANSWER.—It is helpful in such cases to inject 0.2 cc. of a 1:1,000 solution of epinephrine simultaneously with the dose of toxin, taken up in the same syringe with the toxin. If it has been more than a month since the child received the last dose, it would be best to start over with the first dose. These answers are based on the assumption that by "Squibb's Scarlet Fever Antigen" the writer means the five graduated doses of scarlet fever toxin containing no foreign serum, which are distributed for active immunization against scarlet fever.

DOSAGE OF DEXTROSE

To the Editor:—With all the conflicting dosages of dextrose, what is an appropriate dose in grams intravenously per kilogram of body weight? Is it necessary therapeutically to use insulin when giving dextrose? Can insulin be added to the dextrose solution or must it be given separately by hypodermic injection?

SOLON J. LEVINE, M.D., Grover, Colo.

ANSWER.—It is necessary to distinguish between the appropriate and the maximum dose. Woodyatt and his collaborators have shown that normal adults begin to excrete sugar in the urine when the hourly rate of injection into the vein is above 0.8 Gm. per kilogram of body weight. This might constitute a maximum dose. Giving per hour 500 cc. of 10 per cent dextrose solution intravenously would be well within the limit but, if continued throughout twenty-four hours, would yield 6,048 calories a day, which is more than double the income required by the resting person. A 60 Kg. patient at absolute rest in bed requires a minimum of 1,200 calories a day, which would be furnished by 300 Gm. of dextrose, or approximately 0.2 Gm. per kilogram of body weight hourly. This might be considered an appropriate maintenance dose of dextrose, which has also the advantage that it can be given at the optimal rate of infusion, which is literally drop by drop. Insulin is not required unless the patient, owing to hypo-insulinism, develops hyperglycemia during such administration. It may be added to the dextrose solution.

CHANGE OF POSTURE IN DIAGNOSIS OF APPENDICITIS

To the Editor:—Is the following diagnostic sign in acute appendicitis in the young and in those with an appendix which is in the pelvis described in standard works on appendicitis? Place the patient so that he or she lies on the face and then palpate over the lower right quadrant of the abdomen. Several recent experiences in some cases that were doubtful as to the proper diagnosis have convinced me that it is a most useful procedure, as the tenderness on pressure is markedly accentuated and often brings out a tenderness that is not demonstrated when the patient is lying on his back.

HUBERT B. HAYWOOD, M.D., Raleigh, N. C.

ANSWER.—Several writers have emphasized the importance of changing the posture in an effort to determine the presence of tenderness and spasm in suspected appendicitis.

A great many positions are claimed to be helpful, but no mention of the prone position has been seen. No doubt it has been utilized by these physicians, but other positions have been found more helpful.

There is no doubt, from the varied locations in which the appendix may lie, that different positions of the body will influence the amount of tenderness and muscle spasm obtained.

No doubt in all doubtful cases various changes of positions should be made during examination and the prone position may be easily included. This sign may prove helpful.

PARASYMPATHETIC PHYSIOLOGY

To the Editor:—What are the chief differences in the physiology of the sympathetic and parasympathetic nervous systems, especially in regard to organs or parts not supplied by both? What are the chief differences, if any, in the chemistry of activity of smooth and striated muscle? Do all the sphincter muscles of the body have a parasympathetic supply?

J. J. HORTON, M.D., Memphis.

ANSWER.—It is suggested that any standard work on physiology be consulted. In general, the parasympathetic system effects contraction of hollow organs with inhibition (relaxation) of the sphincters, whereas the sympathetic activity results in a relaxation of these organs with contraction of the sphincters. All sphincters appear to be supplied with parasympathetic fibers. There are no known differences in the chemistry of activity of smooth and of striated muscle.

THIOSINAMINE IN ESOPHAGEAL STENOSIS

To the Editor:—How long and how far may thiosinamine be pushed? I have a child with a stenosis of the esophagus. Dilation is being employed, but the child does very much better under thiosinamine. In other words, will it prove a poisonous drug when used over weeks of treatment?

M.D., Illinois.

ANSWER.—There are possibilities of ill effects from the prolonged use of even small doses of thiosinamine, which may show themselves in modifications of the metabolism, with loss of nitrogen, emaciation and fatty degeneration of the parenchymatous organs, especially the heart and the kidneys. It would be best to give it only in direct connection with the dilations and to watch the effect on general nutrition. As many as fifty injections have been given.

PATERNITY DETERMINED BY BLOOD GROUPS

To the Editor:—Mr. ——— is of group III, Mrs. ——— is of group IV, in the Moss grouping, and a girl of 18 is of group III. Mrs. ——— is the girl's mother. What does the grouping indicate as to the relation of Mr. ———?

R. E. JENSTROM, M.D., Rapid City, S. D.

ANSWER.—In scientific medical literature the Moss and Jansky designations of the human blood groups have been replaced by letters O, A, B and AB. O corresponds to Jansky 1 and Moss 4, A to Jansky 2 and Moss 2, B to Jansky 3 and Moss 3, and AB to Jansky 4 and Moss 1. The question concerns what relation there may be between the girl of group B and the man of group B, the mother being of group O. The answer is that as the man and the girl are both of group B, the man may have been the father of the girl so far as their blood grouping goes.

ELECTIVE SITE FOR VACCINATION AND INJECTION OF SERUM

To the Editor: In THE JOURNAL, July 28, I find the advice to inject "alum toxoid subcutaneously at the insertion of the deltoid muscle or in younger children between the shoulder blades." For many years I have, almost without exception, and at all ages, my practice being entirely pediatric, made my injections in the upper gluteal region, and this because in my judgment it is as insensitive a part of the body as there is, and I know no contraindication. My second choice for injection would be the outer aspect of the thigh. I would suggest that if you seriously recommend "between the shoulder blades" you have somebody try it on you once. Then you'll know what I mean.

Even among adults, with modern raiment and modern psychology, I have had no difficulty, for reasons either of practicality or of modesty, in using the same location for the occasional parental adult whom I have injected. I simply disinfect the skin with iodine, always boil my hypodermic syringe and needle—I mention this because I see other people using a less effective means of sterilization—and never cause an abscess. If there is any objection at all to the location for any reason, why it should not be preferred to the insertion of the deltoid or between the shoulder blades, I should like to know it.

Recently it was recommended to vaccinate girls on their arms because the modern scar was small. Why make even a small scar on their arms? In some years of practice my location for girls has crawled up from below the knee almost to the crest of the ilium, where I put it, for cosmetic reasons, usually telling the mother, with a snicker, "to keep it under the bathing suit." Even in diaper age babies I have never seen serious trouble, and seldom any important irritation.

W. D. LUDLUM, M.D., Brooklyn.

VOMITING IN INFANCY

To the Editor:—In Queries and Minor Notes in THE JOURNAL, July 21, page 206, a question as to vomiting in infancy is answered. I believe that in this case another possibility should be considered, namely, congenital diaphragmatic hernia, which can cause exactly these symptoms. I recently had occasion to make this diagnosis in the condition in which the patient also vomited on lying down at night. Both roentgen examination and auscultation gave positive signs, the mass in the chest and a gurgling sound under the stethoscope.

G. T. SCHIMELPFENIG, M.D., Chaska, Minn.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 4. Sec., Dr. W. W. Council, Juneau.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written (Group B candidates).* The examination will be held in various centers throughout the country, Oct. 1. *Oral (Group A and Group B candidates).* San Antonio, Texas, Nov. 13-16. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates).* The examination will be held in various cities of the United States and Canada, Nov. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Sept. 8; San Antonio, Texas, Nov. 13; Philadelphia, June 10. *Application must be filed at least sixty days prior to date of examination.* Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Sept. 8 and San Antonio, Texas, Nov. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: Phoenix, Oct. 2-3. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

CALIFORNIA: Sacramento, Oct. 15-18. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 2. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Oct. 13. Address, State Board of Healing Arts, 1895 Yale Station, New Haven.

GEORGIA: Atlanta, Oct. 9-10. Joint Secretary, State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 2. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, Oct. 16-18. Superintendent of Registration, Department of Registration and Education, Mr. Eugene R. Schwartz, Springfield.

IOWA: Des Moines, Oct. 8-10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MICHIGAN: Lansing, Oct. 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 2-3. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Oct. 16-18. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSOURI: Kansas City, Oct. 24. State Health Commissioner, Dr. E. T. McGaugh, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 2. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations in Parts I and II will be held at centers in the United States where there are five or more candidates, Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: *Basic Science.* Omaha, Oct. 2-3. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, Sept. 13-14. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW JERSEY: Trenton, Oct. 16-17. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 8-9. Sec., Dr. P. G. Cornish Jr., 221 W. Central Ave., Albuquerque.

NEW YORK: Albany, Buffalo, Syracuse and New York, Sept. 24-27. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Sept. 11-12. Sec., Dr. J. M. Byrum, Mammoth Building, Shawnee.

PUERTO RICO: San Juan, Sept. 4. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Oct. 4-5. Dir., Public Health Commission, Dr. Lester A. Round, 519 State Office Bldg., Providence.

WISCONSIN: *Medical. Reciprocity.* Green Bay, Sept. 11. Sec., Dr. Robert E. Flynn, 401 Main St., La Crosse. *Basic Science.* Madison, Sept. 22. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Oct. 1. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

Wyoming June Examination

Dr. W. H. Hassed, secretary, Wyoming State Board of Medical Examiners, reports the examination held in Cheyenne, June 4, 1934. The examination covered 12 subjects and included 119 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. Eleven applicants were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Duke University School of Medicine		(1933)	81

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine	(1932),	(1933)	Colorado
Northwestern University Medical School		(1933)	Colorado
Rush Medical College		(1906)	Utah
University of Illinois College of Medicine		(1933)	Illinois
State University of Iowa College of Medicine		(1931)	Iowa
Washington University School of Medicine		(1930)	Missouri
University of Nebraska College of Medicine	(1926),	(1933)	Nebraska
Marquette University School of Medicine		(1927)	Minnesota
Osteopath*			Michigan

* Licensed to practice osteopathy and surgery.

Hawaii July Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, reports the oral and written examination held in Honolulu, July 9-12, 1934. The examination covered 10 subjects and included 55 questions. An average of 75 per cent was required to pass. Three candidates were examined, 2 of whom passed and 1 failed. One physician was licensed by endorsement, April 26, after an oral examination. The following schools were represented:

PASSED		Year Grad.	Per Cent
University of California Medical School		(1927)	87.6
McGill University Faculty of Medicine		(1932)	87.7*

FAILED		Year Grad.	Per Cent
Chicago Medical School		(1920)	75.5†

LICENSED BY ENDORSEMENT		Year Grad.	Endorsement of
College of Medical Evangelists		(1932)	N. B. M. Ex.

* License has not been issued.
† Failed in more than three subjects.

Book Notices

The Medical and Orthopaedic Management of Chronic Arthritis. By Ralph Pemberton, M.S., M.D., F.A.C.P., Professor of Medicine, Graduate School of Medicine, University of Pennsylvania, and Robert B. Osgood, A.B., M.D., F.A.C.S., Consulting Surgeon, Boston Children's Hospital. Cloth. Price, $5. Pp. 403, with 59 illustrations. New York: Macmillan Company, 1934.

This book is presented as a practical exposition of the subject of chronic arthritis for general practitioners, including internists, and also for orthopedic surgeons. It sets forth the convictions of the authors that chronic arthritis is largely a preventable and curable disease. Fully aware of existing limitations to knowledge in this field, the authors have eminently proved that there has already accumulated a great fund of principles and facts that must become the common property of all who would understand the problems of these diseases and care for their unhappy victims.

The book is in no particular a second edition of Pemberton's monograph of 1929. It is not quite so much of a delineation of his personal ideas as was the latter, and it presents a broader picture and represents the conjoined opinions of an internist and an orthopedist—a fruitful union—on the cause and treatment of chronic arthritis. It is not an inclusive monograph on the arthritides, however, as the authors have seen fit to exclude any discussion of joint diseases other than those which they term "atrophic arthritis" and "hypertrophic arthritis." Therefore, he who expects to find a handbook on the rheumatic diseases including a clinical discussion and differentiation of fibrositis, rheumatic fever, gouty arthritis, chronic traumatic arthritis and so on will need to refer elsewhere, perhaps to one of the American or the more numerous English handbooks.

The subject matter is divided into fourteen chapters and includes discussions on the history and incidence of chronic arthritis, classification, gross and microscopic pathologic characteristics and the associated physiologic disturbances, and considerations on etiology, symptomatology and treatment. The chapters on therapy concern themselves with general medical principles, adjustments of the major bodily systems by means of physical and mechanical aids, dietetics, and special attention to the gastro-intestinal tract, physical therapy, vaccines, drugs, orthopedic appliances and corrective surgery.

Most of the chapters are concise yet comprehensive, and the wide experience and catholic point of view of the authors are apparent. A perusal of chapter III strikingly shows how meager is the knowledge of the physiology of normal joints. The authors frankly realize that certain of their chapters will, as they put it, achieve little popularity. If such is the case, chapters IV and V will be most likely to arouse debate. The view held by the authors as to the etiology and treatment of chronic arthritis, repeatedly set forth heretofore, is summarized in these chapters. They believe that some abnormal physiologic process of circulation and alimentation may basically underlie both types of chronic arthritis, atrophic and hypertrophic, and that the joint lesions result from "the presence in the blood of some diffusible irritant with an affinity for joint tissues, perhaps arising from foci of infection, perhaps from some change in the local physiology of the part or from a disturbance of the normal body chemistry other than that caused by specific pathogenic organisms." They frankly do not have much faith in the infectious theory or regard the influence of focal infection as of primary importance, and although they occasionally "pull their punches" by giving brief credit to the (generally unnamed) workers in these fields, they buffer each sentence of praise with many paragraphs concerned with the inadequacies of the theory of infection. The more common arguments in favor of this theory are almost wholly omitted, perhaps on the assumption that they are already well known and that repetition might give them undeserved emphasis. Although they have excluded certain data and statistics that forcefully demand recognition for the theory of infection, they have presented in no little detail those which favor the metabolic theory, but without discussing with equal candor the many objections.

It is with entire propriety that the authors stress their own view that bacteria usually play a secondary and minor part in the pathogeny of chronic arthritis and that a fundamental deviation from normal physiologic function consists probably in a widespread vasoconstriction of smaller blood vessels secondary perhaps to some as yet undetermined fault of alimentation. One may hold in high regard the clinical and physiologic observations of these authors and yet feel that their interpretation of the significance of these observations remains yet to be evaluated and that the present exposition still does not satisfy the questionings of those previously unconvinced. To such as these the authors' deductions on cause and treatment derived from these observations will still seem to be on no more solid ground than those which have engendered the several varieties of the infectious theory.

In chapters IV and V the authors do not seem to hold entirely to that air of impassioned objectivity and judicial detachment so repetitiously enjoined. Nevertheless, the authors' views deserve the openminded consideration of all those interested in these diseases; and while one may not agree with the emphasis placed on alimentation and on circulation, and on the remedial value of corrective body exercises and of a low calory diet, the foregoing chapters will make him pause and proceed with his own thesis at a more considered pace.

For subsequent revisions of this stimulating textbook a few minor changes are suggested: the inclusion of three or four omitted references in the historical chapter, an improved selection and reproduction of several roentgenograms, the correction of a few errors in fact, the rearrangement of a few paragraphs of inordinate length (from one and a half to two pages), the inclusion of at least some of the bibliography of those "other workers" and, perhaps, a more generous use of photographic illustrations and charts for some of the chapters.

The matured consideration of two of the country's distinguished seniors in this field of medicine, their presentation constitutes a full bodied work, the first comprehensive American monograph devoted exclusively to the two major forms of this vexatious disease group.

Geographie und Geschichte der Ernährung. Von Dr. med. K. Hintze, Professor an der Universität Leipzig. Paper. Price, 21 marks. Pp. 330. Leipzig: Georg Thieme, 1934.

This is a comprehensive survey of the kinds of food used by mankind in various parts of the world from prehistoric times to the present. Attention is given first to the ancient civilizations of the Egyptians, Babylonians, Hebrews, Greeks and Romans; then to life in Europe over a period of 4,000 years, treated in historical periods; viz., prehistorical time, early historical to about 800, Carlovingian time, to about 1300, the Middle Ages, and the Modern Era. A brief chapter is devoted to the Far North including northern Canada, Alaska, Lapland, Greenland and polar Asia. The continent of Asia is discussed in terms of the history of food in China, Japan, India and Central Asia; Africa chiefly in terms of its geographic divisions. In the Americas, North, Central and South, the discussion is limited to the periods before the entrance of the white man. Finally, Australia and the islands of Melanesia, Polynesia and Micronesia are included in this world review. A bibliography, mostly of German works, is included at the end of each chapter.

To those interested in the history of agriculture this book offers a well organized survey of the whole subject. The main factors are probably familiar to most readers or are available in any good encyclopedia, but the author has culled from many sources interesting details as to food preparation and eating customs in all parts of the world, especially in ancient times, and these lighten the recital of the kinds of food available to the various peoples during the development of agriculture in their respective countries. As a reference book its value would have been enhanced by an index. It would be difficult to trace any food, such as wheat, from age to age or country to country, and although so far as the cereals are concerned this objection has been partly met by a section of the appendix devoted to this subject, it would be difficult to find out when and where any other type of food, fruit or vegetable was first used or how its usage spread from one region to others. In the appendix the old subject of vegetarianism is treated historically and the more unusual topics of earth eating and placenta eating are similarly reviewed. The observations made from time to time in the text regarding the relation of diet to health are not supported by scientific data and can be given little weight. The studies of Krogh on the diet of the Eskimo, of Adolph and of Wu on the Chinese diet, of McCarrison on diets in various parts of India, of Orr and Gilks of certain tribes in South Africa exceed in scientific value any citations regarding nutrition made in this book.

Radiologic Exploration of the Mucosa of the Gastro-Intestinal Tract. By the Cole Collaborators: Lewis Gregory Cole, M.D., Robert E. Pound, M.D., William Gregory Cole, M.D., Russell R. Morse, M.D., Courtenay I. Headland, M.D., and Ames William Naslund, M.D. Cloth. Price, $7.50. Pp. 336, with 262 illustrations. St. Paul & Minneapolis: Bruce Publishing Company, 1934.

As readers are duly warned in the preface, this is not a book on the roentgenologic diagnosis of individual gastro-intestinal diseases but a description and analysis of principles on which such diagnosis is based. Accordingly, four broad divisions of the text deal successively with (1) the lumen of the tract viewed in profile, (2) special folds of the mucosa viewed on edge, (3) pliability of the mucosa to peristaltic contraction, and (4) the pattern of the mucosal folds, all as applied to the examination of the esophagus, stomach, duodenal bulb, small bowel and colon.

In recent years continental radiologists, led by Berg and Akerlund, have written voluminously on the mucosal relief and its importance in diagnosis. Indeed, this feature has been exploited so energetically as to foster the impression that the method is wholly new. To correct this misconception, American writers have pointed out that the principle is by no means novel for it has been generally employed almost since the beginning of gastro-intestinal roentgenology, and that Berg, expressly disclaiming priority in this field, has given full credit to the pioneer work of the Viennese roentgenologists and the later contributions of Forssell. This protest is ably seconded by the present volume, which states that the method was used as a routine in America as early as 1910. Further, it is stated, articles by Akerlund and Berg would lead one to believe that they employ variations in the mucosal pattern as the foundation for every diagnosis, whereas on investigation it will be found that practically all their diagnoses are based on changes in the lumenal contour.

Although most roentgenologists follow Holzknecht and rely primarily on roentgenoscopic examination, the senior Cole has adhered tenaciously to serial roentgenography. Hence the technic described in this volume is essentially roentgenographic and is carried out either by serial roentgenography or by what might be called examination de luxe, roentgenocinematography. Whatever may be the opinion of other roentgenologists as to the comparative merits and practicability of roentgenography and roentgenoscopy, they will concede the general efficiency of the roentgenographic procedure as executed by Cole and his associates.

With its broad pages, clear typing and excellent illustrations, the book is typographically attractive. Its contents are never dull, for they faithfully reflect a dynamic personality. Interspersed with the ponderous polysyllables that belong to the roentgenologic ritual are many whimsical and homely but apt similes and many pungent bits of sarcasm.

Not all roentgenologists will accept the contentions here set forth, but their dissent will not in the slightest degree shake the confidence or courage of militant Lewis Gregory Cole. Veterans in this field will not fail to read the book with respectful attention, for they are well aware of Cole's important contribution to the diagnosis of duodenal ulcer and his valiant service to the direct method of diagnosis. New recruits should read it that they may get a broader comprehension of roentgenologic tactics and strategy. Noncombatants, physicians who are not roentgenologists, can read it with profit, for they may at least acquire a realization of the fact that a reliable diagnosis cannot be obtained merely by filling a viscus with barium and "shooting" a single roentgenogram.

La cholécystectomie sans drainage (cholécystectomie idéale). Par P. L. Mirizzi, professeur titulaire de clinique chirurgicale à la Faculté de médecine de Cordoba (Argentine). Paper. Price, 28 francs. Pp. 105, with 71 illustrations. Paris: Masson & Cie, 1933.

This discusses the author's experience in a large series of cases in which cholecystectomy without drainage has been used. Approximately half the book is given over to the discussion of this problem, with frequent references to the literature and with a description of his operative technic, which is completely illustrated with excellent two-tone drawings.

The most interesting part of the monograph is on studies in cholecystography made in the course of operations on the biliary tract. Thirty-seven excellent reproductions of roentgenograms taken of the biliary tract at the time of, or shortly after, operation, showing various obstructions, are presented. Iodized oil, injected through the cystic duct at the time of operation, was used as the substance to fill the biliary passages and obtain the roentgenograms. Concise, excellent explanations are given beneath each. A discussion regarding the association of lesions of the pancreas and sphincter of Oddi is instructive and will serve to advance present knowledge and understanding of these less frequent, and yet many times puzzling, lesions, the symptoms of which are frequently referred to as the post-cholecystectomy syndrome. Professor Mirizzi's monograph is a contribution to the physiology of the intrahepatic and extrahepatic biliary passages, particularly as altered by disease.

A Study of Growth and Development: Observations in Successive Years on the Same Children. By R. M. Fleming. With a Statistical Analysis by W. J. Martin. Medical Research Council, Special Report Series, No. 190. Paper. Price, 1s. 6d. Pp. 85. London: His Majesty's Stationery Office, 1933.

This pamphlet is a statistical study of various measurements taken on children from the age of 3 to 18 in a group of mixed Welsh and English ancestry. More than 1,200 children were studied and the unique thing about the author's work is that observations were made on successive years on the same children, whereas most statistical studies have not followed the various children throughout the growth period. The author confirms the observations that growth occurs in at least two major spurts and the well known fact that girls exceed boys in size in the early adolescent period. The statistical analysis also covers pigmentation of the skin, eye color and forehead shape and discusses various physical, physiologic and psychologic characteristics.

Einige Carcinome und Adenome beim Menschen: Ferner vom Krebs bei Tieren und "in Vitro." Von K. A. Helberg. Paper. Pp. 53, with 2 illustrations. Copenhagen: Levin & Munksgaard; Leipzig: Georg Thieme, 1934.

The author develops the theory previously expressed in his "Grundlage der Geschwulstlehre" concerning the development of cancer by purely mechanical strain (including in this inflammation and chemical influences) on tissue. This results in a displacement of the previous activity of the cell to a higher level, which is expressed in an enlargement of the entire cell or some part of it relative to normal dimensions. He admits also certain tissue predisposition that synergizes the external stimulus. He pleads for the abandonment of previous concepts of tumor classification based on the characteristics of the tumor tissue as a whole (i. e., faulty differentiation or forgotten embryonal cells) in favor of one based on actual microscopic measurement. He feels definitely that the cancer cell is a unique thing. To demonstrate his theory further he offers tables having the nuclear length in micromillimeters as one coordinate

and the various tumors graded or classified histologically as the other. It is his opinion that this is superior to the grading by the conventional methods (i. e., uterus as undifferentiated ripe, unripe and middle ripe). The superiority lies not only in advantages from the standpoint of classification but also from that of prognosis and the situation of radiosensitive growths. The tables offered include carcinoma of the uterus, myoma, ovarian and fallopian carcinoma, prostatic carcinoma, and adenoma, seminoma, carcinoma of the stomach and colon, skin carcinoma, tumors of the nasal glands, liver and pancreas. He also discusses certain experimental tumors of mice from the same standpoint. The article must be read in connection with the author's previous work to be of most value and the tables in it warrant more careful study than can be presented in a brief review.

An Introduction to Practical Bacteriology: A Guide to Bacteriological Laboratory Work. By T. J. Mackie, M.D., D.P.H., Professor of Bacteriology, University of Edinburgh, and J. E. McCartney, M.D., D.Sc., Director of Research and Pathological Services, London County Council. Fourth edition. Cloth. Price, $4. Pp. 504, with illustrations. Baltimore: William Wood & Company, 1934.

This is one of the best laboratory manuals in the English language. It is clear, concise, accurate and wonderfully abreast of current knowledge. In this edition one even finds a reference to the St. Louis encephalitis epidemic of 1933. There are few things to which the most carping critic can take exception; but

Page 348. Not all bacteriologists agree that "Morgan's bacillus and allied types are responsible for some cases of infantile diarrhea in temperate climates."

Page 371. Tularemia in the United States is not confined to the "Western states" but has been reported from practically every state in the Union and from at least one section of Canada.

Pages 428-429. Recent American work is not given full consideration in the section on typhus fever.

The book as a whole can be given the highest praise.

Die Typenlehre in der Mikrobiologie: Ihre Grundlagen und ihre Bedeutung für die Epidemiologie, Klinik und Therapie. Von Prof. Dr. med. et phil. Max Gundel. Paper. Price, 8 marks. Pp. 192. Jena: Gustav Fischer, 1934.

The discovery that different "species" of bacteria are not units but consist of a larger or smaller number of "types," each with its own pathologic implications, has had important practical consequences. Biochemical and serologic differences at first sight of minor importance have turned out to be of first class significance. The author of this useful little monograph, himself well known as a student of bacterial types, has brought together most of the well established facts in a clear and compact form. Although often treated rather summarily, as in the discussion of Bacillus botulinus (pp. 96 and 97), the material is on the whole dealt with critically and with an expert hand. The sections on streptococcus types are particularly good. The book will be of service to all students of one of the most vexed questions in modern bacteriology.

Lehrbuch und Atlas der Haut- und Geschlechtskrankheiten für Praktische Ärzte und Studierende. Auf der Grundlage von Prof. Jacobis Atlas der Hautkrankheiten. Textlich vollständig neu bearbeitet von Dr. Karl Zieler, o. ö. Professor und Vorstand der Universitäts-Klinik und -Poliklinik für Haut- und Geschlechtskrankheiten in Würzburg. Band I: Text; Band II. Tafeln. Third edition. Cloth. Price, 48 marks, per set. Pp. 664; 181, with 512 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1934.

This is a revision of Jacobi's well known Atlas of Skin Diseases, with an accompanying text by one of the best known German dermatologists. Volume I gives a brief but complete survey of the field of skin and venereal diseases. In this volume are 168 illustrations, chiefly drawings of microscopic preparations and fungi. Volume II contains 342 colored reproductions. The majority of these are of high class and the colors are beautifully brought out. Some, however, have an artificial appearance because they are taken from moulages and lack photographic accuracy. Taken together these two volumes should prove of great value to the student of dermatology and will be found of great assistance in visualizing the appearance of the numerous and varied cutaneous disorders illustrated. The price seems reasonable.

Medicolegal

Death Due to Hypersusceptibility to Nupercaine an Accident.—The defendant insurance company issued a policy to the plaintiff's wife that provided for the payment of a certain benefit if she died from "accidental bodily injuries . . . effected solely and independently of all other causes through accidental means." In the course of a tonsillectomy, her physician painted the operative area with nupercaine and injected "the usual amount" of the same drug. While the operation was in progress, his patient collapsed, and died within a few minutes. The surviving husband, as the beneficiary under the policy, sued the insurer for the benefits it had promised to pay. The testimony was to the effect that the attempted removal of the patient's tonsils had nothing to do with her death; that death was due to the administration of nupercaine and the patient's hypersusceptibility to it, and that such hypersusceptibility could not have been known to any practicing physician before the drug was applied and administered. Judgment was given in favor of the beneficiary under the policy, and the insurer appealed to the Supreme Court of Michigan, contending apparently that death was not due to an accidental bodily injury within the meaning of the policy.

"Accidental injuries," said the Supreme Court, have been defined as follows: "Where the effect is not the natural and probable consequence of the means which produce it—an effect which does not ordinarily follow and cannot be reasonably anticipated from the use of the means, or an effect which the actor did not intend to produce, and which he cannot be charged with a design of producing—it is produced by accidental means." 1 C. J., p. 427. The act which here preceded the death of the insured was the administering of the anesthetic to the patient by her physician. As a result thereof, owing to her hypersusceptibility to this drug, an unforeseen, unexpected and unusual occurrence—death—followed. Clearly, the death was caused by accidental means. Judgment in favor of the beneficiary under the policy was affirmed.—*Wheeler v. Title Guaranty & Casualty Co. of America (Mich.) 251 N. W. 408.*

Malpractice: Liability of Physician for Error of Judgment.—De Groot sued the defendant-physicians for alleged malpractice in the treatment of his fractured leg. A judgment in favor of the patient was reversed by the Supreme Court of Michigan.[1] A second trial resulted in another judgment for the patient, and the defendant-physicians appealed again to the Supreme Court.

The defendants contended that the trial court erred in permitting a lay witness to testify as to the plaintiff's physical condition. One does not have to be an expert witness, said the Supreme Court, to testify to what one sees and knows. An ordinary witness can describe what he sees and can testify concerning the kind of injury or sickness in others whom he has had occasion to consort with, unless it is something out of the common course of general information and experience or unless the question presented involves medical knowledge beyond the ken of ordinary laymen. On the whole, said the Supreme Court, we are satisfied that the trial judge correctly instructed the jury regarding a physician's liability for error of judgment in choosing between approved methods of treatment. The general rule is stated in 48 C. J. 1128, as follows:

> Whether errors of judgment will or will not make a physician or surgeon liable in a given case depends not merely upon the fact that he may be ordinarily skilful, but on whether he has treated the case skilfully or has exercised in its treatment such reasonable skill and diligence as is ordinarily exercised in his profession. The exemption from liability does not extend to a case where the error occurs by reason of a physician's lack of the knowledge which he should possess or his failure to exercise proper care; thus a physician is liable for the consequences if the error of judgment is so gross as to be inconsistent with the exercise of that degree of skill and care which it is his duty to apply.

Mortality tables, the Supreme Court said, are properly admitted in evidence.

Judgment in favor of the patient was affirmed.—*De Groot v. Winter (Mich.), 251 N. W. 425.*

1. De Groot v. Winter, 247 N. W. 69, J. A. M. A. **101:** 1888 (Dec. 9) 1933.

Workmen's Compensation Acts: Tuberculosis Due to Lowered Resistance Following Injury Compensable.—To be compensable under the workmen's compensation act, says the district court of appeal of California, second district, division 1, tuberculosis need not be due directly to trauma. If an injury causes a depleted and weakened condition of a workman and thus renders him more susceptible to tuberculosis germs than he otherwise would have been, or makes him unable to resist the attacks of germs in his system, then disease resulting from such germs is a natural sequence of the condition resulting from the injury. If death occurs, the injury is the proximate cause of death; the disease is but a link in the chain of causation.

In this case a medical expert called by the claimant testified that the workman died from pulmonary tuberculosis and that in his opinion the predisposing cause of the disease was the workman's lowered resistance that resulted from an industrial injury. The employer and his insurance carrier introduced no direct evidence on this point. The evidence showed, however, that the workman might have contracted tuberculosis without first sustaining an injury and that the theory that lowered resistance caused by the injury was the inducing cause of his tuberculosis was "purely speculative." Nevertheless it was error, according to the district court of appeal, for the industrial accident commission to find that although the workman died from tuberculosis the disease was neither caused nor aggravated by the industrial injury and that the claimant was not entitled to compensation.—*Baker v. Industrial Accident Commission of California (Calif.), 27 P. (2d) 769.*

Issue of Fraudulent Licenses to Practice as "Unprofessional or Dishonorable Conduct."—Lentine was licensed in 1929 to practice medicine in Missouri. In March 1930 he pleaded guilty in a criminal action in Illinois, which charged that in 1928 he attempted to aid certain unqualified persons to obtain fraudulently licenses to practice medicine in Illinois. In June 1930 the state board of health of Missouri revoked his license to practice in that state, on a charge that he was guilty of unprofessional and dishonorable conduct and was of bad moral character, based on his criminal activities in Illinois just referred to. The circuit court for the city of St. Louis sustained the action of the board, and Lentine appealed to the Supreme Court of Missouri, division number 1.

The Missouri medical practice act (Revised Stats., 1929, sec. 9120) provides, in part, as follows:

> The board [the state board of health] may refuse to license individuals of bad moral character, or persons guilty of unprofessional or dishonorable conduct, and they may revoke licenses, or other rights to practice, however derived, for like causes, . . . Habitual drunkenness, drug habit or excessive use of narcotics, or producing criminal abortion, or soliciting patronage by agents, shall be deemed unprofessional and dishonorable conduct within the meaning of this section.

Lentine argued that his conduct had not constituted unprofessional or dishonorable conduct within the meaning of the statute. The statute, he urged, by enumerating certain acts as unprofessional and dishonorable conduct restricts the meaning of the term to those acts alone and excludes any and all other acts affecting the practice of medicine, however reprehensible, immoral or unlawful they may be.

The Missouri medical practice act, said the Supreme Court, attempts to secure to the people the services of competent practitioners, learned and skilled in the science of medicine, of good moral character and honorable and reputable in professional conduct. The license granted places the seal of the state's approval on the licentiate and certifies to the public that he possesses those qualifications. The legislature, in specifying that habitual drunkenness, the drug habit, the excessive use of narcotics, criminal abortion and soliciting patronage by agents shall be deemed unprofessional and dishonorable conduct did not intend thereby to exclude as grounds for the revocation of a license all other acts, conduct and moral behavior of a physician which by common opinion and fair judgment are found to be in their very nature unprofessional and dishonorable. On a showing of any of the things enumerated in the statute, the board of health, and the court on review, is not called on to determine whether such conduct is or is not such as in common judgment is deemed unprofessional and dishonorable, for the statute has expressly declared them so to be. It would not be practicable, however, to specify each and every act or course of conduct which constitutes bad moral character or unprofessional and dishonorable conduct and as to acts other than those named, the statute operates when they are in their nature and by common opinion unprofessional and dishonorable.

The use of the general terms "bad moral character" and "unprofessional and dishonorable conduct" does not render the medical practice act so uncertain, vague or ambiguous as to be unenforceable. Certainty is required, said the court, that in preferring a charge the licentiate shall be informed of the specific acts or course of conduct on his part alleged to be unprofessional and dishonorable or the basis of a charge of bad moral character. After due notice of the revocation proceedings, the question whether or not the acts or conduct charged are such as to constitute unprofessional and dishonorable conduct or render the licentiate a person of bad moral character, within the purview of the statute, calls for the exercise of judgment and sound discretion on the part of the board of health. The board must hear and weigh the evidence and pronounce a conclusion. If the board orders the license revoked, the licentiate may then have the finding and order of the board fully reviewed by the courts.

The order of the board revoking Lentine's license was affirmed.—*State ex rel. Lentine v. State Board of Health (Mo.), 65 S. W. (2d) 943.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Sept. 9-14. Dr. William P. Wherry, 107 South 17th Street, Omaha, Executive Secretary.

American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 6-8. Dr. Eugene Whitmore, 2139 Wyoming Avenue, N.W., Washington, D. C., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 6-8. Dr. A. M. Mendenhall, 23 East Ohio Street, Indianapolis, Acting Secretary.

American College of Surgeons, Boston, Oct. 15-19. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Congress of Physical Therapy, Philadelphia, Sept. 10-13. Dr. Nathan H. Polmer, 921 Canal Street, New Orleans, Secretary.

American Hospital Association, Philadelphia, Sept. 24-28. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.

American Public Health Association, Pasadena, Calif., Sept. 3-6. Dr. Kendall Emerson, 50 West 50th Street, New York, Executive Secretary.

American Roentgen Ray Society, Pittsburgh, Sept. 25-28. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.

Associated Anesthetists of the United States and Canada, Boston, Oct. 15-19. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.

Association of Military Surgeons of the United States, Carlisle Barracks, Pa., Oct. 8-10. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 19-22. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.

Delaware, Medical Society of, Dover, Oct. 9-10. Dr. William H. Speer, 917 Washington Street, Wilmington, Secretary.

Idaho State Medical Association, Lewiston, Sept. 7-8. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.

Indiana State Medical Association, Indianapolis, Oct. 9-11. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 1-4. Dr. Hugh Wilkinson, 750 Minnesota Avenue, Kansas City, Kan., Secretary.

Kentucky State Medical Association, Harlan, Oct. 1-4. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Battle Creek, Sept. 12-14. Dr. Burton R. Corbus, 110 Fulton Street E., Grand Rapids, Secretary.

Nevada State Medical Association, Reno, Sept. 21-22. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

New England Surgical Society, Burlington, Vt., Sept. 28-29. Dr. J. M. Birnie, 14 Chestnut Street, Springfield, Mass., Secretary.

Northern Minnesota Medical Association, Brainerd, Sept. 10-11. Dr. Oscar O. Larsen, Detroit Lakes, Secretary.

Ohio State Medical Association, Columbus, Oct. 4-6. Mr. Don K. Martin, 1005 Hartman Theatre Building, Columbus, Secretary.

Oregon State Medical Society, Corvallis, Sept. 27-29. Dr. L. Howard Smith, Medical Arts Building, Portland, Secretary.

Pennsylvania, Medical Society of the State of, Wilkes-Barre, Oct. 1-4. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Virginia, Medical Society of, Alexandria, Oct. 9-11. Miss Agnes V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Washington State Medical Association, Spokane, Sept. 10-13. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Western Branch of American Public Health Association, Pasadena, Calif., Sept. 3-6. Dr. W. P. Shepard, 600 Stockton Street, San Francisco, Secretary.

Wisconsin, State Medical Society of, Green Bay, Sept. 12-14. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

21: 501-756 (July) 1934

Adamantinoma or Ameloblastoma of Hypophyseal Duct Region: Case Report. Mary Oliver and E. Scott, Columbus, Ohio.—p. 501.
Studies on Tumor Metastasis: V. Metastases of Carcinoma to Spleen. S. Warren and A. H. Davis, Boston.—p. 517.
Carcinoma of Hepatic Duct: Report of Additional Case. R. Lampert and Elizabeth M. McFetridge, New Orleans.—p. 534.
Papillary Cystadenocarcinoma of Pancreas: Case Report, with Notes on Classification of Malignant Cystic Tumors of Pancreas. L. Lichtenstein, New York.—p. 542.
Duration and Extent of Irritation Versus Genetic Constitution in Etiology of Malignant Tumors. M. R. Curtis, W. F. Dunning and F. D. Bullock, New York.—p. 554.
Malignant Cells of Two Crocker Cysticercus Sarcomas. W. Mendelsohn, New York.—p. 571.
*Osteitis Fibrosa of Recklinghausen, Heterotopic Parathyroid Adenoma, Metastases of a Benign Adenomatous Struma and Adenoma of Left Adrenal in Same Patient. H. Bergstrand, Stockholm, Sweden. —p. 581.
Malignant Tumor of Left Tibial Nerve. H. Bergstrand, Stockholm, Sweden.—p. 588.
Cutaneous Red Pigmented Tumor (Erythrophoroma) with Metastases in a Flatfish (Pseudopleuronectes Americanus). G. M. Smith, New Haven, Conn.—p. 596.
Adenocarcinoma of Uterus in Rabbit. O. I. Cutler, Loma Linda, Calif.—p. 600.
Body Temperature and Tumor Growth. W. H. Woglom, New York. —p. 604.
Studies on Chromium: I. Quantitative Determination of Chromium in Human Tumors. A. Dingwall, R. G. Crosen and H. T. Beans, New York.—p. 606.
A Radium Safe. M. C. Reinhard, Buffalo.—p. 612.
Lipoid Tumors. C. F. Geschickter, Baltimore.—p. 617.
Cases Admitted to Pondville Hospital (Massachusetts State Cancer Hospital) During Its First Two Years: Further Report. By the Staff.—p. 642.

Case of Pluriglandular Neoplasm. — Bergstrand reports the following case of pluriglandular neoplastic growth: In the left lobe of the thyroid there was a partly calcified, encapsulated adenoma, the size of a plum. There were numerous tumor metastases in both lungs, the largest as big as a pea and with a reddish gray, rather soft cut surface. There was a large tumor metastasis in the pleura between the sixth and the seventh rib. Examination of the fatty thymus revealed in its lowest part, in front of the pericardium, a tumor as big as a pigeon's egg, and of an appearance somewhat different from the foregoing metastases. This tumor was brown and soft, presenting a smooth glossy surface. On the lesser curvature of the stomach there was a pedunculated polyp. Microscopic examination of the adenoma of the thyroid showed a strictly circumscribed fibrous, partly calcified capsule. There was no infiltrative growth in the parenchyma of the gland. The structure of the tumor varied. In some places the alveoli were small and lacked colloid. In some areas this small folliculated parenchyma was of a still less differentiated shape and the tumor cells forming bands and fields were separated by capillaries. The parathyroid struma in front of the heart had an appearance which the author has found in several other cases of von Recklinghausen's osteitis fibrosa. The tissue consisted of large epithelial cells rich in protoplasm and arranged in solid follicles surrounded by capillaries. They contained practically no fat. Some areas were adenomatous, and in these the cells were large, with multiple nuclei of varying size. The protoplasm in these cells was eosinophil. Microscopic examination of the suprarenals revealed a small encapsulated adenoma. The chromaffin cells of the medulla stood out sharply blue in preparations stained with hematoxylin and eosin. In the kidneys vast deposits of calcium were in the parenchymal cells and in the interstitial spaces. The metastases in the lungs were a parenchymatous thyroid adenoma with the tumor cells arranged in bands or small follicles, mostly empty. The tumor of the left humerus was uniform and the structure resembled a struma colloides, with large follicles filled with colloid. Slides from different parts of the skull, the spinal column and the tubular bones showed the osteolytic process characteristic of osteitis fibrosa of von Recklinghausen. The haversian canals were much widened and filled with connective tissue and giant cells of the osteoclast type, arranged along the walls in small cavities in the bone. There was no evidence of new bone formation, cysts and giant-cell tumors being absent, and the contents of the major marrow cavities of the bones were unchanged.

American Journal of Clinical Pathology, Baltimore

4: 321-380 (July) 1934

Rôle of the Pathologist in Cancer Problem. A. G. Foord, Pasadena, Calif.—p. 321.
Clinicopathologic Relationship in Common Breast Lesions. F. H. Lamb, Davenport, Iowa.—p. 327.
Cause of Local Reactions Following Administration of Staphylococcus Bacteriophage. W. E. King, D. A. Boyd Jr. and J. H. Conlin, Ypsilanti, Mich.—p. 336.
Blood Iodine Studies: IV. Clinical Determination of Iodine in Blood, Urine and Feces. F. J. Phillips and G. M. Curtis, Columbus, Ohio. —p. 346.
Accuracy of Common Hemoglobin Methods. H. L. Alt, Chicago. —p. 354.
*Presence of Arsenic in Brain and Its Relation to Pericapillary Hemorrhages or So-Called Acute Hemorrhagic Encephalitis. A. E. Osterberg and J. W. Kernohan, Rochester, Minn.—p. 362.
Blood Dyscrasias: Symptom Complex Rather Than a Disease Entity. B. Markowitz, Bloomington, Ill.—p. 370.

Arsenic in Brain and Its Relation to Pericapillary Hemorrhages.—Osterberg and Kernohan point out that the condition known as acute hemorrhagic encephalitis may be due to the administration of organic compounds containing arsenic. The changed appearance of the brain and spinal cord is due to multiple capillary hemorrhages in the white matter of the central nervous system. Chemical determination shows that arsenic is present in this tissue in relatively large amounts. When organically bound arsenic is administered in the treatment of neurosyphilis, it usually is demonstrable in the central nervous system in varying amounts. Inorganic arsenic, when ingested by accident or with suicidal intent, also accumulates in the central nervous system, but it seldom produces hemorrhages. In the presence of an unexplained gross hemorrhage or of multiple petechial hemorrhages in the white matter of the central nervous system, a chemical investigation for arsenic should be carried out.

American Journal of Surgery, New York

25: 1-198 (July) 1934

*Glomus Tumor: Clinical Study with Report of Ten Cases. F. E. Adair, New York.—p. 1.
Disruption of Abdominal Wounds. J. F. Baldwin, Columbus, Ohio. —p. 7.
Relationship Between Retrocecal Appendix and Lane's Kink and Its Surgical Significance. K. A. Meyer and J. L. Spivack, Chicago. —p. 12.
Acute Appendicitis in Children. S. McLanahan, Baltimore.—p. 14.
New Incisional Approach to the Appendix. E. H. Fiske and H. E. Rhame, Brooklyn.—p. 19.
Modification of the Dawbarn Technic for Dealing with the Appendiceal Stump. F. M. Al-Akl, New York.—p. 26.
Acute Generalized Suppurative Peritonitis: Treatment by Intra-Abdominal Lavage with Ethyl Alcohol (Reduction of Mortality from 50 to 4 per Cent). R. J. Behan, Pittsburgh.—p. 28.
Acute Mesenteric Lymphadenitis: Clinical Syndrome in Children Simulating Appendicitis. S. L. Goldberg and I. T. Nathanson, Chicago. —p. 35.
Indications and Operative Technic in Diseases of Stomach and Gallbladder, as Practiced at the Clinic of Professor Schmieden, University Frankfort-on-Main, Germany. E. Kraas, Frankfort-on-Main, Germany. —p. 41.
Enterostomy, with Especial Reference to Operative Technic in Acute Intestinal Obstruction. R. R. Linton, Boston.—p. 55.
Evaluation of Palliative Operation for Cancer of the Pancreas. F. A. Coller, Ann Arbor, Mich., and J. M. Winfield Jr., Wilmington, Del. —p. 64.
Primary Duodenitis. F. Cunha, San Francisco.—p. 70.
Repair of Rectovaginal Fistula. F. H. Bowman, Yonkers, N. Y.— p. 80.
Some Tumors of the Ovary. L. O. Baumgardner, Cleveland.—p. 82.
Ovarian Thyroid Tissue Tumor. R. O. Lyday, Greensboro, N. C.— p. 89.
Carcinoma of the Breast: Statistical Fallacy. A. Gentile, Newport News, Va., D. R. Murphey Jr. and E. P. Lehman, University, Va. —p. 91.

Relation of Fetal Adenoma to Malignancy of the Thyroid Gland. J. F. Habermel, New Albany, Ind.—p. 97.
Carcinoma of the Tongue with Generalized Metastases. M. Lenz and Edith E. Sproul, New York.—p. 102.
Superficial Inflammatory Diseases: Treatment by Radiation Therapy: Review of One Thousand and Eighteen Consecutive Cases. A. B. Friedman, Brooklyn.—p. 107.
*Gas Bacillus Infection Following Clean Amputations. T. G. Orr, Kansas City, Kan.—p. 113.
Fractures of the Femoral Shaft: Comparative Study of the Present Methods of Treatment. D. Prey and J. M. Foster Jr., Denver.—p. 116.
*Tendon Transplantation in Obstetric Paralysis. J. B. L'Episcopo, Brooklyn.—p. 122.
Inflammatory Joint Conditions as Affected by Menstruation. J. T. Rugh, Philadelphia.—p. 126.
Evipan Anesthesia: Preliminary Report. C. S. White and J. L. Collins, Washington, D. C.—p. 131.
Acacia Solution in Treatment of Surgical Shock: Analysis of Three Case Histories. R. W. Good, R. Mugrage and R. Weiskittel, Cincinnati.—p. 134.
Sterilization of Blowfly Eggs in Culture of Surgical Maggots for Use in Treatment of Pyogenic Infections. S. W. Simmons, Washington, D. C.—p. 140.
Elimination of Certain Dangers in Treatment of Varicose Veins. N. J. Kilbourne, Los Angeles.—p. 148.

Glomus Tumor.—This tumor is a recent addition to oncology. Adair analyzes ten cases. It occurs frequently beneath the nail and on the hands, arms and legs. In no instance did it occur on the body or the head. Pain is the striking characteristic, produced by the slightest amount of pressure. As a rule the tumor occurred in the later periods of life. The average duration of the tumor was nine years. At first glance the lesion appears to be an intradermal neurofibroma. It is smooth, rounded, elevated and colored from rose to purple. It suggests at times a small hemangioma; but it is a solid tumor. The lesion varies from 4 to 10 mm. in diameter. If beneath the nail, it is smaller than when in the skin. In the subungual position the lesions were smaller than when located in other places in which there was no pressure element to change their size and shape. The location, the dark rose color, excruciating tenderness and pain, the size, the solitary nature and the age incidence make diagnosis easy. In only one of the ten cases were there multiple lesions. In eight of the ten cases the lesion was surgically removed and a microscopic study was made. The lesion consists of irregular, tortuous, cavernous blood vessels. The lining endothelial cells are cuboidal and rest on a thin collagenous membrane. Some of the vessels are surrounded by a layer of circular muscle, passing gradually into a zone of "epitheloid" cells. There seems to be no constant or definite relationship between this tumor and the occurrence of any other special type of tumor. The wide variety of lesions accompanying the glomus tumor probably has little or no significance. The lesion is benign. The most satisfactory treatment is surgical extirpation under procaine hydrochloride anesthesia. Eight of the patients obtained immediate relief by this procedure and have remained cured. The best treatment of the lesions in the subungual position is removal of the nail, followed by excision of the lesion in the nail bed. Irradiation was employed in one case. To this lesion was applied a square radium plaque of 700 millicurie hours, at 1 cm. distance with 3 mm. of brass filter. This treatment was later repeated. No visible effect on the lesion resulted from these treatments. The lesion may be radioresistant. The cases have been traced and examined since treatment for periods varying from three months to eleven years. None have recurred.

Gas Bacillus Infection.—Orr reviews the literature and describes three additional cases. He found that gas bacillus infection, in what is ordinarily considered clean operative wounds, is rare. Because of the prevalence of gas-producing organisms, the possibility of such infection should be kept in mind. Any sudden postoperative rise in temperature, or unusually severe pain following an operation, should suggest the possibility of beginning gas bacillus gangrene, demanding an immediate examination of the wound. The infecting organism may have its source in infections associated with gangrene and therefore may enter the fresh wound either through the lymphatic circulation or as a direct skin contamination from the gangrenous area. The infecting bacillus of one case undoubtedly was an organism of lower virulence than the average Bacillus welchii. At no time was there any alarming evidence of serious infection in this patient. The mortality rate in the twenty-one collected and reported cases is 71 per cent. This high death rate is probably due to the generally serious condition of this group of patients. It is also possible that there may have been some delay in treatment, since gas gangrene is not usually anticipated when amputations are done through relatively normal tissues. As a therapeutic precaution, it is wise to make anaerobic cultures of all gangrene or ulcerations of the lower extremity when amputation is contemplated. If a positive culture is found, gas bacillus antitoxin should be given before operation.

Tendon Transplantation in Obstetric Paralysis.—L'Episcopo found that residual deformity in obstetric paralysis is essentially due to contracture of the internal rotators and adductors. Multiplicity of operations devised to correct the resulting deformity proves that no one method is satisfactory. Previous operations have been done only to release contractures. The author presents the following operation, which aims to restore muscle balance at the shoulder between the internal and external rotators: The contracted anterior tissues are released by the Sever technic through the usual medial incision. After the wound is closed a skin incision is made, from 3 or 4 inches long, parallel with the posterior border of the deltoid muscle and long head of the triceps. The incision is carried through the superficial and deep fascia, exposing the deltoid, long head of the triceps and teres major muscles. The long head of the triceps is retracted outward, exposing the tendon of the teres major muscle and the humerus. The tendon is freed at its insertion and detached. The dissection is carried out almost entirely with blunt instruments to avoid injury to important structures. These structures are protected against injury if one keeps close to the teres major tendon throughout the dissection. After the teres tendon has been cut, by inserting a blunt periosteal elevator in front of the tendon and cutting against it, the long head of the triceps is strongly retracted outward, exposing the posterior, lateral aspect of the humerus and the upper part of the origin of the lateral head of the triceps. Then an osteoperiosteal flap is lifted from the shaft of the humerus as close to the short head of the triceps as possible. The tendon of the teres major is buried and sutured under this osteoperiosteal flap and the wound is closed in layers. A plaster-of-paris spica cast is applied with the arm abducted and rotated outward with the forearm flexed and supinated. The new insertion is almost directly opposite the old one and the tendon wraps itself round the humerus from behind laterally instead of from behind medially, so that, when the muscle contracts, the humerus must rotate outward instead of inward. The cast is left on for six weeks, then cut open so that it can be used as a splint, and the splint is removed three times a week for massage and gentle passive and active exercises. The splint is discarded three months after the operation, but the exercises and muscle reeducation are continued for at least six months. The author performed this operation on six patients with highly gratifying results.

Anatomical Record, Philadelphia

59: 273-394 (June 25) 1934

Anomalous Branches from Aortic Arch and Persistent Vena Cava Superior Sinistra: Case. B. S. Hopkins Jr. and R. W. Satterthwaite, Baltimore.—p. 273.
Bone Changes Due to Lathyrism in Rats. J. J. Robinson and T. H. Bast, Madison, Wis.—p. 283.
Hemal Nodes in Man. H. E. Jordan, University, Va.—p. 297.
Homology of Presemimembranosus Muscle in Some Rodents. J. E. Hill, San Francisco.—p. 311.
Supracondyloid Variation in Human Embryo. Julia Lindsay Adams, St. Louis.—p. 315.
Distribution and Source of Estrin in Pregnant Mare. H. R. Catchpole and H. H. Cole, Davis, Calif.—p. 335.
Gonad and Thyroid Stimulating Potencies of Phyone and Hebin. A. Elizabeth Adams, South Hadley, Mass.—p. 349.
Effects of Ultracentrifugating on Golgi Apparatus in Uterine Gland Cells. H. W. Beams and R. L. King, Iowa City.—p. 363.
Effect of Anterior Lobe Extract or Concentrated Human Urine of Pregnancy on Early Part of Gestation in Rabbit. G. B. Wislocki and L. Goodman, Boston.—p. 375.
Some Facts Regarding Growth of Wistar Rat Under Standard Conditions in Britain (Derivative Edinburgh Stock). A. M. Hain, Edinburgh, Scotland.—p. 383.
New Formula for Injecting Cadavers. C. E. Kellner, New York.—p. 393.

Annals of Surgery, Philadelphia

99: 881-1050 (June) 1934

Factors Leading to Death in Operations on Gallbladder and Bile Ducts. G. J. Heuer, New York.—p. 881.
Important Factors in Surgical Treatment of Cholecystitis. H. F. Graham and H. S. Waters, Brooklyn.—p. 893.
*Acute Cholecystitis: Study of Seventy-Five Cases with Subsiding or Subsided Clinical Manifestations at Time of Operation. A. S. W. Touroff, New York.—p. 900.
Perforation of Gallbladder. E. L. Eliason and C. W. McLaughlin, Philadelphia.—p. 914.
Acute Free Perforation of Gallbladder. O. W. Niemeier, Hamilton, Ont.—p. 922.
Acute Inflammation of Gallbladder: Conservative Operative Treatment. M. Behrend, Philadelphia.—p. 925.
Primary Carcinoma of Common Bile Duct. W. E. Lee, Philadelphia, and H. P. Totten, Los Angeles.—p. 930.
Roentgenologic Localization of Spinal Subarachnoid Block by Use of Air in Subarachnoid Space. W. P. Van Wagenen, Rochester, N. Y. —p. 939.
Treatment of Tuberculous Empyema Complicated by Pyogenic Infection. A. V. S. Lambert, New York.—p. 944.
Skeletal Muscle Sarcoma. E. M. Bick, New York.—p. 949.
Localized Chronic Ulcerative Ileitis. A. D. Bissell, Chicago.—p. 957.
Anterior Hemipylorectomy for Aberrant Pancreatic Tissue of Duodenum: Diagnostic Difficulties. R. R. Best and W. F. Bowers, Omaha.—p. 967.
*Carotid Sinus as Etiologic Factor in Sudden Anesthetic Death. T. M. Downs, Philadelphia.—p. 974.
Relation of Postoperative Paralytic Ileus to Mortality in Acute Appendicitis. P. C. Potter, New York.—p. 985.
Femoral Hydrocele. J. D. Rives, New Orleans.—p. 989.
*Germicidal Effects of Tannic Acid: With and Without Addition of Mercurial Antiseptics. J. D. Martin Jr. and C. D. Fowler, Atlanta, Ga.—p. 993.
Treatment of Varicose Ulcers and Veins. G. P. Pennoyer, New York. —p. 997.
Fractures of Lower End of Humerus. W. Bates, Philadelphia.—p. 1007.
Fractures of Leg Below Lower Third. A. Walkling, Philadelphia.—p. 1009.
Fractures of Shaft of Humerus. C. M. Smyth Jr., Philadelphia.—p. 1013.

Acute Cholecystitis.—From a review of 429 operative cases of cholecystitis, Touroff concludes that: 1. Acute inflammatory changes may exist in the gallbladder of a patient presenting minimal or absent clinical manifestations at the time of operation. 2. The pathologic changes range from simple acute inflammation to hemorrhagic, suppurative and gangrenous inflammation, empyema, perforation and pericholecystitic abscess. 3. In general, the patients presenting minimal manifestations at the time of operation show a considerably higher percentage of advanced and progressive lesions than the patients showing no manifestations at the time of operation. 4. In a selected series of seventy-five cases, 80 per cent of the lesions were considered to be subsiding or capable of subsidence. The remaining 20 per cent were considered to be progressive in nature. 5. It is impossible to determine the exact nature and extent of the inflammatory lesion before operation in any given case. 6. In cases of acute cholecystitis, if subsidence once begun does not proceed uninterruptedly, fairly promptly and completely, early operation is indicated. 7. In cases of acute cholecystitis in which the clinical manifestations have subsided, early operation is indicated.

The Carotid Sinus and Sudden Anesthetic Death.—Downs describes the occurrence of sudden respiratory failure in nitrogen monoxide and oxygen anesthesia. He states that no yet known factor is responsible for this failure and that heretofore no treatment has been of any avail. Animal experiments are mentioned, in which this sudden arrest of respiration was duplicated by stimulation of the carotid sinuses in various ways. This experimental respiratory failure seemed in all respects comparable to that occurring clinically. He suggests that this accident may be avoided by scrupulous care not to exert pressure on or just behind the angle of the jaw, that the addition of ether vapor to the gas will render the sinus less responsive to any accidental pressure and that, if respiratory failure should occur, mechanical artificial respiration with a respirator is the treatment that offers the best promise of success.

Tannic Acid May Convey Bacteria.—Martin and Fowler found that tannic acid of strengths from 1 to 5 per cent are not effective germicides. The 10 and 20 per cent solutions were found to be germicidal within twenty-four hours. Tannic acid itself may be the agent of conveyance of the bacteria, as evidenced by the recovery of a number of bacteria other than the original. The 1, 2 and 5 per cent solutions produced nine contaminations: gram-positive spore bacillus, four; gram-positive bacillus, three; gram-positive streptobacillus, one, and gram-positive staphylococcus, one. The 10 and 20 per cent solutions showed no growth on the end plates. Owing to this fact, the only explanation of the large number of growths is that the tannic acid itself carried the bacteria into the plates. It was not deemed necessary to find how much less than twenty-four hours would be required to destroy the bacteria, because in the treatment of burns the solutions are allowed to remain in contact with the denuded areas for much longer periods. According to Seeger, the more concentrated solutions of tannic acid, even the lowest used, are highly astringent and tend to cause swelling and edema of the tissues and too rapid fixation of the tannin. This factor alone would prohibit the use of more concentrated solutions in order to derive its beneficial bactericidal property. Therefore the less harmful antiseptic solutions may be of some benefit, since it was found that in the less concentrated solutions of tannic acid with the antiseptics there was an inhibition of bacterial growth.

Archives of Pathology, Chicago

18: 1-156 (July) 1934

Extramedullary Erythrocytopoiesis in Man. H. E. Jordan, University, Va.—p. 1.
*Chronic Cicatrizing Enteritis: Involvement of Cecum and Colon. J. C. Donchess and S. Warren, Boston.—p. 22.
*Hepatic Changes Associated with Decompression of Obstructed Biliary Passages. H. L. Stewart and M. M. Lieber, Philadelphia.—p. 30.
Cytology of Peritoneal Fluid in Partially Hepatectomized Animals. G. M. Higgins and L. G. Montgomery, Rochester, Minn.—p. 42.
Phagocytic Behavior of Interstitial Cells of Brain Parenchyma of Adult Rabbit Toward Colloidal Solutions and Bacteria. R. J. Lebowich, Gloversville, N. Y.—p. 50.

Cicatrizing Enteritis.—Donchess and Warren report a case of chronic cicatrizing enteritis involving the entire cecum and ascending colon, without any appreciable change on the proximal side of the ileocecal valve other than a moderate degree of hypertrophy of the muscularis produced through partial obstruction at the valve. They believe that the condition apparently developed after appendicitis. The exact etiology is unknown. The recovery of organisms from the lesions would have been without significance, because of the ease with which the ulcerated mucosa could be traversed. The chief importance of this lesion lies in its mimicry of carcinoma. In all probability, apparent cases of certain intestinal cancers may be explained by the fact that a lesion of this nature was mistaken for carcinoma.

Hepatic Changes Associated with Obstructed Biliary Passages.—Stewart and Lieber observed that, following surgical decompression of an obstructed biliary system, hepatic pigmentation diminishes progressively in patients who survive the immediate effects of the operation, and the hepatic parenchyma tends to return to a normal condition by the recovery of many of the degenerated but still viable hepatic cells and also by regeneration. There is no evidence that hepatic cells arise from the biliary ducts, which rapidly involute following decompression. Lobular expansion subsequent to regeneration of hepatic cells results in compression and condensation of connective tissue at the periphery. The features of regeneration may be minimal or entirely absent in some livers in which the changes are those of a severe acute hepatosis occasionally complicated by hemorrhage and superimposed infection. Disruption of the intralobular architecture with disorganization and dissociation of hepatic cell cords occurs regularly. The necrosis in the inner third of the lobule often extends into the middle and outer thirds or involves the entire lobule, resulting occasionally in acute diffuse necrosis. Many of the focal midzonal and biliary necroses also enlarge and may form abscesses. In addition, the hepatic cells may be atrophied and distorted and at times show cytoplasmic and nuclear vacuolation. The recently regenerated hepatic cells may undergo degeneration and necrosis. The vascular changes include thrombosis, rupture of the sinusoidal reticular walls, hemorrhage, edema of the perivascular tissue spaces and hyperemia, either focal or general throughout the organ. Physical, chemical and infectious factors probably play an etiologic part in the pathogenesis of these lesions.

Arkansas Medical Society Journal, Fort Smith

31: 27-40 (July) 1934

Recent Advances in Surgery. C. S. Holt, Fort Smith.—p. 27.
Recent Progress in General Medicine. S. C. Fulmer, Little Rock.—p. 32.

California and Western Medicine, San Francisco

41: 1-72 (July) 1934

Nonorganic Convulsive Disorders of Childhood, with Especial Reference to Idiopathic Epilepsy. I. McQuarrie, Minneapolis.—p. 1.
How Can Psychiatry Progress? C. W. Mack, Livermore.—p. 8.
Bad Anesthetic Risks: Their Management. J. M. Wilson, Pasadena.—p. 12.
Diagnosis Versus Treatment, with Reference to Dermatology. L. F. X. Wilhelm, Los Angeles.—p. 14.
Ruptured Ectopic Pregnancy. L. J. Tiber, Los Angeles.—p. 16.
Physiology of Sense Organs: Some Recent Advances. J. M. D. Olmsted, Berkeley.—p. 20.
*Mussel Poisoning. W. Stegeman, Crescent City.—p. 26.
The Radiologist in the Hospital: His Status. L. S. Goin, Los Angeles.—p. 28.
Compulsory Health Insurance. F. L. Hoffman, Philadelphia.—p. 33.

Mussel Poisoning.—During the summer, Stegeman encountered five cases of mussel poisoning in Crescent City. Other cases, some fatal, were reported along the Oregon coast, also for the first time. The first symptoms are generally a feeling of numbness about the mouth and tingling of the hands and feet. Another significant, early complaint is a feeling of "lightness." Generally, recovery is complete and fairly quick. In the fatal cases, death occurs in a relatively few hours from respiratory paralysis. The approved treatment is the rapid elimination of the toxic material by emesis, followed by supportive treatment. Because the toxic material does not generally promote increased peristalsis or diarrhea, purges must be given promptly and in large doses to be effective. However, in view of the rapid absorption of the toxin, the use of cathartics may be questioned, owing to the additional shock imposed on the patient. At the first sign of dyspnea, artificial respiration should be resorted to.

Canadian Public Health Journal, Toronto

25: 255-306 (June) 1934

Some Public Health Activities and Needs in Ontario. J. J. McCann, Renfrew, Ont.—p. 255.
The 1932 Epidemic of Poliomyelitis in Quebec. A. R. Foley, Quebec, Que.—p. 260.
Making Ice Cream Safe. E. Langevin, Quebec, Que.—p. 275.
Trachoma Among Indians of Western Canada. J. J. Wall, Ottawa, Ont.—p. 279.
Milk Contamination and Methylene Blue Reduction Test. H. R. Thornton, N. J. Strynadka, F. W. Wood and C. Ellinger, Edmonton, Alta.—p. 284.

Johns Hopkins Hospital Bulletin, Baltimore

55: 1-84 (July) 1934

Pneumococcic Lipoid Nephrosis and Relation Between Nephrosis and Nephritis: I. Clinical and Anatomic Studies. S. S. Blackman Jr., Baltimore.—p. 1.
*Acid-Base Balance of Gastric Juice, Blood and Urine Before and at Intervals After Stimulation of Gastric Juice by Histamine. L. Martin, with assistance of E. Steigerwald, Mary-Lee Carroll and M. Morgenstern, Baltimore.—p. 57.

Stimulation of Gastric Juice by Histamine.—Martin observed a number of cases in order to estimate the electrolyte changes in the gastric juice, blood and urine during the period of gastric secretion. Histamine was used as a stimulant, and the gastric juice was continuously extracted during the period of observation. The patients were divided into two groups: those who were able to secrete free hydrochloric acid into the gastric juice and those who were not. The amount of salts lost from the body in the first was about four times that lost in the second group. In the blood of the first group the typical changes were a decrease of chloride and phosphate, and an increase of the carbon dioxide content and serum protein. There was a slight rise of total serum base. This represents a state of relative alkalosis. The urine became more alkaline in the majority of cases. Among the anions, chloride and phosphate fell while the carbon dioxide increased. Of the cations, base, hydrogen ion concentration and ammonia nitrogen fell. The author describes instances of atypical changes of both blood and urine and advances hypothetic explanations of these changes. In the achlorhydrias the variations in the majority of the cases were similar in kind but different in degree from those described. The difference in degree consisted of a smaller loss of electrolyte in the gastric juice and correspondingly smaller variations in the blood and the serum. In the initial specimen, certain distinctive differences between the groups were noted. In the second group the carbon dioxide capacity of the serum fell more frequently and the blood chloride rose more often, although the rises were small. In the urine the change of p_H was apt to be less marked and in a larger proportion of cases the urine became more acid or remained unchanged.

Journal of Allergy, St. Louis

5: 439-540 (July) 1934

Development of Hypersensitiveness in Man: I. Following Intradermal Injection of Antigen. F. A. Simon and F. M. Rackemann, Boston.—p. 439.
Id.: II. Absorption of Antigen Through Nasal Mucous Membrane. F. A. Simon and F. M. Rackemann, Boston.—p. 451.
Ultrafiltration of Ragweed Pollen Extracts. W. C. Spain and J. M. Newell, New York.—p. 455.
Production in Rabbit of Hypersensitive Reactions to Lens, Rabbit Muscle and Low Ragweed Extracts by the Action of Staphylococcus Toxin. E. L. Burky, Baltimore.—p. 466.
Vasomotor Rhinitis with Negative Skin Tests: Local Nasal Allergy. J. A. Rudolph and M. B. Cohen, Cleveland.—p. 476.
Perennial Hay Fever from Indian Gum (Karaya Gum). S. S. Bullen, Rochester, N. Y.—p. 484.
Skin Reactions in Infants: Susceptibility of the Skin of the New-Born to Passive Atopic Sensitization: Comparison with Reactions to Histamine. T. N. Carey and L. N. Gay, Baltimore.—p. 488.
*Relation of Inspiratory Distention of Lungs to Emphysema. M. Prinzmetal, St. Louis.—p. 493.
Study of the Silk Allergen. S. J. Parlato and Gertrude Swarthout, Buffalo.—p. 505.
Blood Inorganic Phosphorus in Allergy. L. A. Crandall and S. M. Feinberg, Chicago.—p. 515.
Hypersensitivity to Bees Successfully Treated with Whole Bee Extract: Case Report. D. C. Fisher, Clarence Center, N. Y.—p. 519.
Tricophytin: Its Use According to Allergic Principles. H. J. Templeton, Oakland, Calif.—p. 521.

Relation of Inspiratory Distention to Emphysema.—Prinzmetal observed that experimental bronchoconstriction in dogs first causes pulmonary distention with increased inspiratory position of the chest, and a more negative intrapleural pressure. In four cases of bronchial asthma the intrapleural pressure was found to be more negative than normal instead of more positive, indicating active pulmonary distention by increased inspiratory effort. The prolonged effect of more negative intrapleural pressure causes distention and stretching of the lungs with probable loss of elasticity. This is the first step in the production of structural emphysema. Thereafter the intrapleural pressure rises, and the weakened alveolar walls subjected to further strain rupture and coalesce. Direct experiments show that increased carbon dioxide tension and anoxemia also cause a more negative intrapleural pressure and a mean increased thoracic girth. Anoxemia produced by low oxygen tensions has been shown to produce emphysema in rats. The greater negative intrapleural pressure found in bronchoconstriction may be explained by increased resistance to respiration, carbon dioxide retention and anoxemia resulting from bronchoconstriction.

Journal of Biological Chemistry, Baltimore

105: 633-816 (July) 1934

Effect of Variation of p_H on the Process of Heat Denaturation of Egg Albumin. B. M. Hendrix and P. S. Wharton, Galveston, Texas.—p. 633.
Petroleum Ether Constituents and Ether Soluble Constituents of Cranberry Pomace. K. S. Markley and C. E. Sando, Washington, D. C.—p. 643.
Effect of Inorganic Salt Intake on Mineral Composition of the Blood. V. G. Heller and H. Paul, Stillwater, Okla.—p. 655.
Basic Amino Acids of Three Crystalline Mammalian Hemoglobins: Further Evidence for a Basic Amino Acid "Anlage" of Tissue Proteins. R. J. Block, New Haven, Conn.—p. 663.
Effect of Dry Heat and Dilute Alkali on Lysine Content of Casein. R. J. Block, D. B. Jones and C. E. F. Gersdorff, Washington, D. C.—p. 667.
Directive Influences in Biologic Systems: IV. Further Study of Lipase Actions of Type I Pneumococci. Grace McGuire and K. G. Falk, New York.—p. 669.
Gravimetric Determination of Total Base of Serum and Blood: Note. Pauline M. Hald, New Haven, Conn.—p. 675.
Some Enzymes of Solanum Indicum. H. Tauber and I. S. Kleiner, New York.—p. 679.
Composition of Proteins of Eggs from Hens on Different Diets. H. O. Calvery and H. W. Titus.—p. 683.
Influence of Epinephrine on Chemical Changes in Isolated Frog Muscle. A. H. Hegnauer and Gerty T. Cori, St. Louis.—p. 691.

Oxidation of Glucose by Air in Presence of Iron Pyrophosphate. A. Goerner, Brooklyn.—p. 705.
Provitamin D of Cholesterol: I. Antirachitic Efficacy of Irradiated Cholesterol. J. Waddell, with assistance of E. L. Rohdenburg, New Brunswick, N. J.—p. 711.
Spectrophotometric Characteristics of Hemoglobins: I. Beef Blood and Muscle Hemoglobins. J. H. Shenk, J. L. Hall and H. H. King, Manhattan, Kan.—p. 741.
Id.: II. Hemoglobin of Fowls. Dorothea E. Klein, J. L. Hall and H. H. King, Manhattan, Kan.—p. 753.
Salts of Ergosteryl Sulphate: Preparation and Antirachitic Activity on Irradiation in Aqueous Medium. S. Natelson, A. E. Sobel and B. Kramer, Brooklyn.—p. 761.
Effect of Insulin on Glucose-Chloride Relationship and Anhydremia in Blood of Rabbits. A. S. Chaikelis, New York.—p. 767.

Journal of Bone and Joint Surgery, Boston

16: 495-760 (July) 1934

Leadership in Orthopedic Surgery. M. S. Henderson, Rochester, Minn. —p. 495.
*New Radical Operation for Pott's Disease: Report of Ten Cases. H. Ito, J. Tsuchiya, Kyoto, Japan, and G. Asami, Ube, Japan.—p. 499.
Treatment of Legg-Calvé-Perthes Disease Without Weight-Bearing. M. S. Danforth, Providence, R. I.—p. 516.
Status of Kocher's Method of Reducing Recent Anterior Dislocation of Shoulder. J. Nash, New York.—p. 535.
Tuberculosis of Shaft of Large Long Bones of the Extremities. C. K. Hsieh, L. J. Miltner and C. P. Chang, Peiping, China.—p. 545.
Experimental Muscular Atrophy. T. C. Thompson, Oxford, England. —p. 564.
Maggot Therapy: Technic and Clinical Application. A. Fine and H. Alexander, New Orleans.—p. 572.
Fracture of Vertebrae Without Cord Symptoms: Report of Forty Cases. R. F. Bowers, New York.—p. 583.
Nontuberculous Infections of the Spine. A. Whitman and R. W. Lewis, New York.—p. 587.
Sarcoma Formation in Paget's Disease of Bone. R. Perlman, Cincinnati.—p. 594.
Correction of Lateral Compression Fracture of Lumbar Vertebra. L. Mayer, New York.—p. 604.
Pathologic Changes of Muscles in Common Diseases of Children: Their Relationship to Scoliosis. J. G. Kuhns, Boston.—p. 609.
Acetabular Decompensation. E. K. Cravener, Schenectady, N. Y. —p. 618.
Multiple Fractures Associated with Blue Sclera. E. B. Kaplan, New York.—p. 625.
Hematogenous Tuberculosis of Skeletal Muscle: Report of Case with Involvement of Gastrocnemius Muscle. W. W. Plummer, S. Sanes and W. S. Smith, Buffalo.—p. 631.
Fractures of Patella. A. W. Allen, Boston.—p. 640.
Adolescent Osteochondritis of Symphysis Pubis: Consideration of Normal Roentgenographic Changes in Symphysis Pubis. M. Burman, I. N. Weinkle and M. J. Langsam, New York.—p. 649.
Physiotherapy in Fracture Treatment. F. J. Cotton and T. H. Peterson, Boston.—p. 658.
Recurrent Dislocation of Shoulder. T. Nicola, New York.—p. 663.
Knee Joint Visualization: Roentgenographic Study with Iopax. D. Boyd, Highland Park, Ill.—p. 671.
Osteoid Tissue Forming Tumor Simulating Annular Sequestrum. H. Milch, New York.—p. 681.
Osteitis Fibrosa Localisata of Patella. R. D'Aunoy and J. H. Connell, New Orleans.—p. 689.
*Treatment of Displaced Transverse Fractures of Neck of Radius in Children. R. F. Patterson, Knoxville, Tenn.—p. 695.
Localized Adhesive Spinal Arachnoiditis: Obscure Cause of Radiating Low Back Pain. J. Kulowski and W. Scott, Iowa City.—p. 699.
Arthrotomy at Knee: Posterior Incision. A. Klein, Boston.—p. 704.
Lumbosacral Facetectomy for Relief of Sciatic Pain: Case Report. C. L. Mitchell, Detroit.—p. 706.
Modification of Skeletal Traction in Fractures of Long Bones: Report of Three Cases. W. H. Bailey, Oklahoma City.—p. 709.
Conservative Treatment for Complete Dislocation of Acromioclavicular Joint. A. H. Trynin, Brooklyn.—p. 713.
Pellegrini-Stieda Disease: Case Report. N. H. Rachlin, Brooklyn. —p. 716.
Traumatic Dislocation of Hip (Head of Femur) into Scrotum. A. G. Goetz, Detroit.—p. 718.
Operation for Bilateral Osteo-Arthritis of Hip. H. Goldberg, Louisville, Ky.—p. 721.

Operation for Pott's Disease.—Ito and his associates outline incisions and operative procedures for Pott's disease involving the lumbar vertebrae below and including the second (pararectal incision with extraperitoneal approach), for resection of the body of the twelfth dorsal or first lumbar vertebra (oblique incision, similar to that of Bergmann's for nephrectomy) and a preliminary costotransversectomy for resecting the body of a dorsal vertebra. They believe that in performing a radical operation it is not only necessary to be thorough in curettage but also the eburnated bony tissue of the immediate vicinity must be chiseled off, as this maneuver definitely favors the subsequent regeneration of bone. A complicating cold abscess heals by mere aspiration of its contents and obliteration of its communication with the original focus. In a series of experiments on rabbits the authors proved that, when autotransplantation of bone is made into the place of a resected body of vertebra, a new bone is formed on the line of contact between the healthy vertebra and the transplant; the transplant itself grows by proliferation of its own tissue and a weight of 20 Kg. is easily withstood by the transplanted segment of the spine. A defect in the body of the vertebra caused by resection may be repaired either by an operation after the method of Albee or by direct transplantation of a piece of the patient's own tibia or rib, without subsequent disturbance of weight-bearing function, as shown by the fact that a kyphosis does not develop and that no increase of a preexisting kyphosis occurs. Of the ten cases in which they employed their technic of radical operation on the vertebrae, all except two cases showed healing by first intention. In one of the two cases, in which a fistula had developed, its spontaneous closure occurred quite early and the patient was discharged in a satisfactory condition a month after operation by the Albee method. In the other case, discharge from the sinus has greatly diminished and there is evidence to indicate its spontaneous healing in the near future.

Transverse Fractures of Neck of Radius.—Patterson describes a method of operative removal of the head of the radius in children applicable only to complete fractures of the neck, or that portion of the radius between the head and the insertion of the biceps, with displacement, and possibly to epiphyseal separation. The annular or orbicular ligament must be intact. An assistant grasps the arm and fixes the humerus, placing one hand against the inner condyle to act as a fulcrum for leverage. Another assistant uses traction on the arm and forces the forearm inward until the carrying angle is obliterated. He also supinates the forearm to relax the supinators. The position is checked by roentgenograms and, if the fracture has been reduced, a cast is applied with the arm in complete extension. The cast is worn two weeks and then removed, following which physical therapy is instituted. The elasticity of the ligaments and other joint structures in children enables one to revolve the forearm inward on a vertical axis passing through the inner condyle. The method has been used in two instances with satisfactory reduction.

Journal of Lab. and Clinical Medicine, St. Louis

19: 1033-1150 (July) 1934

Friedman Rabbit Ovulation Test in Differential Obstetric Diagnosis. A. G. King, New Orleans.—p. 1033.
Relationship Between Coronary Blood Supply to Experimentally Produced Ventricular Lesions and Resulting Electrocardiographic Alterations. D. I. Abramson, J. H. Crawford and G. H. Roberts, Brooklyn.—p. 1040.
Effect of Hyperpyrexia on the Phosphorus Partition of Whole Blood in Paresis. D. Sackett and A. W. Turner, Elgin, Ill.—p. 1045.
Spinal Fluid Sugar Determinations in Experimental Hypoglycemia of Dogs. R. Davis and H. Brown, Philadelphia.—p. 1049.
Blood Lipase in Patients with Peptic Ulcer: Its Relation to Hepatic and Pancreatic Disease. F. H. Jergesen and J. P. Simonds, Chicago. —p. 1054.
Carcinoma of Pancreas. F. K. Hick and H. M. Mortimer, Chicago. —p. 1058.
*Use of Synthaline in Diabetes Mellitus. L. K. Campbell, Chicago. —p. 1067.
Basal Metabolism of Old People. Y. Kisé and T. Ochi, Tokyo, Japan. —p. 1073.
Blood Picture in Oral Infection. H. H. Peterson and J. L. T. Appleton Jr., Philadelphia.—p. 1079.
Effect of Various Colloidal and Crystalloidal Metallic Compounds in Nutritional Anemia of Rat. H. L. Keil and V. E. Nelson, Ames, Iowa.—p. 1083.
Experiments in Use of Mineral Water in Management of Diabetes Mellitus. L. K. Campbell, Chicago.—p. 1088.
Dynamic Consequences of Auriculopericardial Fistula. H. Landt and R. Friedman, Chicago.—p. 1091.
Typhoid-Like Infection Associated with an Organism Resembling Bacillus Proteus-Pseudovaleriae (De Assis). C. H. Nammack and Florence R. Bittman, New York.—p. 1094.
Improvised Bacteriologic Incubator. R. A. Hankey, Butler, Ind. —p. 1098.
Determination of the p_H of Normal and Malignant Tissues with Glass Electrode and Vacuum Tube Null Indicator. H. M. Partridge, J. A. C. Bowles and Anna Goldfeder, New York.—p. 1100.
Recording Electrodynamic Brake Bicycle Ergometer. L. E. A. Kelso and Frances A. Hellebrandt, Madison, Wis.—p. 1105.
Tryptophan Content of Blood Serum: New Technic. A. T. Brice Jr., Palo Alto, Calif.—p. 1113.
Combination Condensing and Receiving Vessel. R. A. Greene and R. R. Roehm, Tucson, Ariz.—p. 1116.
Dog Operating Table. R. A. Cutting, New Orleans.—p. 1117.

*Estimation of Plasma Bilirubin: Comparative Study of van den Bergh and Thannhauser and Andersen Procedures. E. H. Bensley, Montreal.—p. 1122.
Method of Preparing Duodenal Pouches for Use in Experimental Work. F. C. Hill, I. Neigus and C. M. Wilhelmj, Omaha.—p. 1126.
*Reticulocytes. E. E. Osgood and Mable M. Wilhelm, Portland, Ore. —p. 1129.
Small Animal Metabolism Cage. S. E. Owen, Hines, Ill.—p. 1135.

Decamethylene Diguanidine in Diabetes Mellitus.—Campbell states that the daily administration of 0.025 Gm. of decamethylene diguanidine (synthaline) by mouth produced a well defined reduction in the urinary dextrose excretion in a diabetic patient. The maximal effect or complete desugarization of the urine was not reached until the fourth day of administration with 30 units of insulin daily and not until the sixth day without insulin. The failure of the level of urinary dextrose excretion to return in the after period to that of the fore period in the first instance was probably due to a return of the natural tolerance of the patient, brought on by the period of desugarization. This was less evident in the second instance, for the dextrose excretion level in the second after period almost reached that of the fore period. Because of the toxic effect on the liver reported by other investigators, the use of decamethylene diguanidine was discontinued.

Estimation of Plasma Bilirubin.—Bensley made 100 determinations of the bilirubin content of blood by the van den Bergh and the Thannhauser and Andersen methods in cases with "direct" bilirubin. Both methods were used in each case and determinations were made simultaneously. In subsiding jaundice, the values obtained by the van den Bergh technic are not even approximately correct; loss of bilirubin may be as much as 60 per cent or more. In such cases, therefore, the Thannhauser and Andersen procedure is indispensable. In all other cases, however, including latent jaundice, the van den Bergh technic, although not strictly quantitative, is sufficiently quantitative for clinical purposes.

Method for Staining Reticulocytes.—The study of Osgood and Wilhelm of methods for reticulocyte staining showed a great number of different technics giving variant results. The following is the most satisfactory technic for staining and counting reticulocytes: Equal parts (5 drops) of oxalated venous or capillary blood and 1 per cent of brilliant cresyl blue in 0.85 per cent sodium chloride solution are mixed in a small test tube. This is allowed to stand at least one minute, it is mixed, and thin smears are made, which are dried in the air as usual. These smears may be counted at any time within twenty-four hours, but if a permanent preparation is desired they should be counterstained with Wright's stain by the usual technic. The brilliant cresyl blue solution keeps well but should be filtered if débris appears on the slide. An area is selected on the slide which contains from 50 to 75 red cells per oil immersion field. All the cells are counted and all the reticulocytes in as many adjacent fields as is necessary to give a total of 500 red cells if the count is more than 5 per cent, or 1,000 red cells if the count is less than 5 per cent. With this method a count of 23.6 per cent was obtained in the blood which gave 17.6 per cent with the best method previously studied.

Maine Medical Journal, Portland

25: 117-140 (June) 1934

Hypertension and Kidney Disease. E. R. Blaisdell, Portland.—p. 119.
Analysis of Cancer Work in Four Kennebec County Hospitals for a Two-Year Period. E. H. Risley, Waterville.—p. 124.
Analysis of Forty-Three Cases of Cancer Treated at the Augusta General Hospital During the Years 1932-1933. V. T. Lathbury, Augusta. —p. 127.
Analysis of Cancer Cases at Gardiner General Hospital During the Years 1932-1933. C. H. Ferrell, Gardiner.—p. 128.
Analysis of Cancer Cases at the Thayer Hospital During the Years 1932-1933. A. H. McQuillan, Waterville.—p. 129.
Analysis of Cancer Cases at Sisters' Hospital During Years 1932-1933. L. A. Guite, Waterville.—p. 131.

Military Surgeon, Washington, D. C.

74: 281-334 (June) 1934

Value of Studies in Health and Sanitation in War Planning. P. W. Gibson.—p. 281.
March Casualties Due to Heat Exhaustion: Suggested Cause and Treatment. H. A. Brodkin.—p. 295.
Amputations in the Aged for Gangrene. H. M. Williamson.—p. 298.
Pellagra in a Soldier: Case Report. H. E. Fraser.—p. 302.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

9: 365-504 (June) 1934

Pathogenesis of Chronic Ulcerative Pulmonary Tuberculosis. E. R. Long, Philadelphia.—p. 365.
Edema and Its Treatment. R. F. Loeb, New York.—p. 392.
Principles and Theories of Anthelmintic Medication. M. C. Hall, Washington, D. C.—p. 418.
Studies on Schistosomiasis Mansoni in Puerto Rico: II. Epidemiology and Geographic Distribution of Schistosomiasis Mansoni in Puerto Rico: Survey of Intestinal Parasites in Endemic Schistosomiasis Areas in Puerto Rico. E. C. Faust, W. A. Hoffman, C. A. Jones and J. L. Janer, New Orleans.—p. 447.
*Paragonimus Westermani: Report of Case Presenting Abdominal Involvement. Z. Bercovitz, Pyengyang, Chosen, and J. M. Rogers, Soonchun, Chosen.—p. 492.

Paragonimus Westermani.—Bercovitz and Rogers report a case of abdominal involvement in a patient with lung fluke (Paragonimus westermani). The ova, unevenly distributed, were found in the lymphoid tissue and lymph sinuses but not in any of the blood vessels of nodules removed from the mesentery and parietal peritoneum. Surrounding each group of ova there was evidence of cloudy swelling and hyperplasia of the endothelial cells. Degeneration of the nuclei took place in the nodules surrounded by the clustering ova. No adult worms were found in any of the tissues. The clinical impression was that of a generalized malignant condition of the abdomen.

Radiology, Syracuse, N. Y.

23: 1-130 (July) 1934

Infectious Granulomas of Bones and Joints, with Especial Reference to Coccidioidal Granuloma. R. A. Carter, Los Angeles.—p. 1.
Lymphoblastoma: Generalized Disease. G. W. Holmes, Boston.—p. 17.
Standard Ionization Chamber for Grenz Rays. L. S. Taylor and C. F. Stoneburner, Washington, D. C.—p. 22.
Cholecystography with Tetraiodophenolphthalein by Mouth: Experience with Regard to Success and Untoward Reactions. R. R. Newell and E. Leef, San Francisco.—p. 31.
Physiology of Gallbladder: Cholecystography Shows No Psychic Emptying. E. Leef, San Francisco.—p. 35.
Roentgen-Ray Burns: Report of Nine Cases from University Hospital, Philadelphia, 1907 to 1933. G. S. Zugsmith, Pittsburgh.—p. 36.
Roentgenologic Consideration of Arthritides. L. J. Gelber, Newark, N. J., and S. Goldberg, Belleville, N. J.—p. 45.
Animal Experiments with Colloidal Thorium: Study in Lymphatic Absorption. R. Pomeranz, Newark, N. J.—p. 51.
Gas X-Ray Tube for Irradiation with Soft X-Rays. H. Kersten, Cincinnati.—p. 60.
Exponential Law of Tissue Recovery Applied to Radium and Radon Dosage. M. M. D. Williams, Peiping, China.—p. 64.
X-Ray Therapy of Carcinoma of Lip and Skin. W. E. Howes, Brooklyn. —p. 71.
Objective Otologic Roentgen Stereoscopy and Its Significance for Roentgen Diagnosis of Diseases of Mastoid Process. C. E. Koch, Cologne, Germany, translation by H. A. Jarre, Detroit.—p. 75.
Roentgen Findings in Small Stomach Lesions Compared with Intragastric Photographs of Living Subject. P. E. Thal, Chicago.—p. 80.
Effect of Roentgen-Ray Exposures of Cerebral Cortex on Activity of Cerebral Hemispheres. M. I. Nemenow, Leningrad, U. S. S. R. —p. 86.
Effect of Roentgen Rays on Brain. M. I. Nemenow, Leningrad, U. S. S. R.—p. 94.
*New Method for Radiographic Exploration of Mediastinum and Concealed Portions of Pulmonary Fields. P. M. Andrus, London, Canada.—p. 97.

Roentgenographic Exploration of Mediastinum.—Andrus outlines a method for exploring the mediastinum and concealed portions of the pulmonary fields, by the employment of which glandular masses are frequently visible which are not seen in tube-centered or the conventional oblique exposures. Their position in relation to the trachea or main stem bronchi is also apparent. Such visualization depends on the presence of calcium, because of the density of the vascular structures with which they are contrasted. Complete calcification is not necessary, as scattered lime may indicate the presence of caseocalcareous deposits. It would seem that an improved visualization of the occurrence, extent and relationships of the glands in the region of the tracheal bifurcation can be expected to constitute an important advance, especially in the study of tuberculous infection in children. The author suggests off-centered thoracic exposures for the roentgenography of the concealed portions of the pulmonary fields and the region of the tracheal bifurcation, in anticipation of a more widespread experience than is possible in a single center, determining whether the procedure has anything of importance to add to medical methods.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

7: 257-320 (May) 1934

Pneumonoconiosis: Part I. Silicosis. J. F. Bromley.—p. 263.
Id.: Part II. Pulmonary Asbestos. W. B. Wood.—p. 277.
Id.: Part III. Pulmonary Asbestosis. P. Ellman.—p. 281.
Effect of X-Rays and Gamma Rays on the Indophenol Oxidase. R. E. Havard.—p. 296.

British Medical Journal, London

2: 1-48 (July 7) 1934

Presacral Nerve: Its Anatomy, Physiology, Pathology and Surgery. A. A. Davis.—p. 1.
Thyroid Addiction. S. W. Patterson.—p. 6.
Severe Menorrhagia Due to Chronic Thrombocytopenic Purpura Cured by Splenectomy. S. J. Hartfall and C. Oldfield.—p. 8.
Weil's Disease Among Sewer Workers in London. N. H. Fairley. —p. 10.
Spirochetal Hemorrhagic Jaundice (Weil's Disease): Case. W. G. Willoughby and A. G. Shera.—p. 14.
*Pulmonary Tuberculosis After Sunbaths. A. Hope Gosse and G. S. Erwin.—p. 15.

Pulmonary Tuberculosis Following Sunbaths.—Gosse and Erwin made a study of the relation, if any, between sunbathing and pulmonary tuberculosis. Careful inquiry in each case elicited the fact that, out of sixty-six cases of pulmonary tuberculosis admitted to the hospital between August and December 1933, the onset or exacerbation of symptoms in eleven cases followed sunbathing. The age incidence ranged between 19 and 33, years common to sunbathing and to the production of the exudative type of the disease, which was the one present in the eleven cases on roentgen appearances. Although there was a considerable proportion of the fibroid type of disease among the other fifty-five patients, each one of them denied indulging in sunbathing during the summer, and an absence of sun pigmentation supported their statements as far as it could. The fibroid type was present in some patients whose age was greater than the average of sunbathers, and in others who had passed the exudative stage. Many of these patients had a long history of tuberculosis and had been deliberately warned by their doctors against the danger of sunbathing. That the abnormal exposure of the usually covered skin surfaces to the action of the sun's rays aggravates the development of pulmonary tuberculosis is a conclusion suggested by these eleven cases. The authors believe that this new social custom has elements of danger if indulged in extensively and indiscriminately. The exact manner in which sunbathing may aggravate tuberculosis is not understood; that is, whether long sunbaths raise the body temperature in healthy young adults or possibly only in those in a hyperallergic state. For the latter possibility there is some support in the fact that several patients showed an immediate reaction in the form of malaise and sweats, as well as a delayed reaction from some weeks to three or four months later in the more dramatic form of hemoptysis among other symptoms.

East African Medical Journal, Nairobi

11: 73-104 (June) 1934

Some Considerations on Diagnosis in Leprosy and on Treatment of Lepers. T. B. Welch.—p. 76.
Immunization Against Trypanosomiasis. S. C. Schilling, H. Schreck, H. Neumann and H. Kunert.—p. 83.
Investigation into Certain Cases of Edema Occurring Among Kikuyu Children and Adults. R. U. Gillan.—p. 88.

International Journal of Psycho-Analysis, London

15: 117-386 (April-July) 1934

Fate of Ego in Analytic Therapy. R. Sterba.—p. 117.
Nature of Therapeutic Action of Psychoanalysis. J. Strachey.—p. 127.
Oral Erotism in Paraphrenia: Facts and Theories. A. J. W. Holstijn. —p. 160.
"Infectious" Parapraxes. A. Szalai.—p. 187.
Prophetic Dreams. H. Zulliger.—p. 191.
Analysis of Psychotics. P. Federn.—p. 209.
Psychoanalysis of the Uncanny. E. Bergler.—p. 215.
Play Analysis of a Three-Year-Old Girl. Melitta Schmideberg.—p. 245.
Elie Metschnikoff and His Theory of an "Instinct de la Mort." A. L. Cochrane.—p. 265.
Depersonalization in Relation to Erotization of Thought. C. P. Oberndorf, New York.—p. 271.

Journal of Pathology and Bacteriology, Edinburgh

39: 1-254 (July) 1934

Nephrosis or Nephritis? J. S. Dunn.—p. 1.
Neurogenic Tumors of Sympathetic System in Children. J. W. S. Blacklock.—p. 27.
*Lympho-Epithelioma of Nasopharynx and Tonsils. D. F. Cappell.—p. 49.
Experimental Infection with Trypanosoma Congolense in Mice: Effect of Splenectomy. C. H. Browning, D. F. Cappell and R. Gulbransen. —p. 65.
Prophylaxis of Experimental Trypanosome Infections by Chemotherapeutic Agents. C. H. Browning and R. Gulbransen.—p. 75.
*Sarcoma of the Spleen. J. W. McNee.—p. 83.
Observations on Bactericidal Properties of Leukocytes and Blood Platelets, with Particular Reference to Their Action in Presence of Normal Serum. T. J. Mackie, C. E. Van Rooyen and M. H. Finkelstein. —p. 89.
Degeneration of Lateral Geniculate Bodies: Contribution to Pathology of Visual Pathways. Ivy Mackenzie.—p. 113.
Study of a Luminous Organism in Relation to Nutrition on Agar. J. Cruickshank.—p. 141.
Qualitative Difference Between Syphilitic and Nonsyphilitic Human Serum in Syphilis Flocculation Test: Physicochemical Study of Sachs-Georgi Reaction. E. M. Dunlop and S. Sugden.—p. 149.
*Observations on Bacterial Capsules as Demonstrated by a Simple Method. J. W. Howie and J. Kirkpatrick.—p. 165.
Epithelial Cysts of Renal Pelvis, Ureter and Bladder. G. H. Wilson. —p. 171.
Mixed Tumor (Renal Blastocytoma) of the Parovarium. J. S. Young and C. G. Lowry.—p. 179.
Blood Changes in Rats and Mice After Splenectomy, with Observations on Bartonella Muris and Eperythrozoon Coccoides. J. A. W. McCluskie and Janet S. F. Niven.—p. 185.
Is Fatty Degeneration of the Heart Muscle a Phanerosis? J. H. Dible. —p. 197.
Observations on the Incidence of Malignant Disease in South African Natives. A. S. Strachan.—p. 209.
Conversion of Glycogen of the Vagina into Lactic Acid. R. Cruickshank. —p. 213.
*Cultivation of Gonococcus as a Method in Diagnosis of Gonorrhea, with Especial Reference to Oxydase Reaction and to Value of Air Reinforced in Its Carbon Dioxide Content. J. W. McLeod, J. C. Coates, F. C. Happold, D. P. Priestley and B. Wheatley.—p. 221.
Pulmonary Fibrosis of Hematite Miners. M. J. Stewart and J. S. Faulds.—p. 233.

Lympho-Epithelioma of Nasopharynx and Tonsils.—Cappell studied twelve cases of malignant disease of the nasopharynx, tonsils and pharynx and believes that they are of epithelial origin, arising from the specialized epithelium of the pharyngeal lymphoid tissues. He emphasizes the value of silver impregnation of the reticulum as a means of demonstrating the structure of such growths. These tumors show distinctive clinical and pathologic features and may justifiably be separated from other neoplasms under the name of "lympho-epithelioma." Two main types of histologic structures have been recognized, one corresponding to the classic lympho-epithelioma of Regaud and the other to the lympho-epithelioma of Schmincke. It is shown that these are not different types of neoplasm but represent merely quantitative differences in the mode of growth and spread of the tumor cells. Evidence for regarding transitional cell carcinoma of the nasopharynx and the tonsil as a different form of neoplasm from lympho-epithelioma is not definitely established in the present observations and it is believed that the two are at least closely related. Lympho-epitheliomas are highly radiosensitive and the value of radiation therapy in contrast to surgical excision is clearly demonstrated in the present series of cases.

Sarcoma of the Spleen.—The spleens removed by McNee from two patients represented two types of the same variety of primary lymphosarcoma of the spleen, arising from the lymphoid malpighian bodies, as indicated with certainty by the recognition of a central arteriole in many nodules of the growth. In the first patient there were no obvious metastases at the time of the operation, but now, four years later, a mass of uncertain nature is present in the left side of the abdomen. In the second patient the lymph nodes of the groins were enlarged and invaded by growth of the same histologic structure for more than a year before splenectomy was performed. No further secondary growths were observed during the operation and no necropsy was held. Two spleens apparently identical with the author's first case have been recorded, one by Foix and Roemmele and one by Ross. This is the type which Paraf and Abaza, speaking of the case reported by Foix and Roemmele, describe as "splenome nodulaire" in contrast to the far more numerous examples of "splenome massif" in which the spleen contains a single large mass, or several masses, of

lymphosarcomatous growth. The term "splenome" is obviously used in an entirely general sense. The second spleen described here would appear to occupy an intermediate place, but approaching more the first than the second category of Paraf and Abaza. Ross regards the essential pathologic change as a progressive hyperplasia of the follicular reticulum cells—a lymphoid reticulosis rather than a true tumor growth. In view of the abundant mitotic figures exhibited in the cells of both cases, and of the certainty of growth of the same kind at a distance in one case and the possibility of secondary growth in the other, the author prefers to regard the whole process as a true tumor rather than as any form of hyperplasia. Since it is evident that in these cases metastatic spread is uncommon, the correct treatment would seem to be removal of the spleen provided a correct diagnosis can be made.

Demonstration of Bacterial Capsules.—According to Howie and Kirkpatrick, a simple and reliable method for the demonstration of bacterial capsules consists in adding to a loopful of exudate or of culture suspended in broth on a microscope slide a drop of dilute phenolfuchsin, followed by a drop of a 5 to 10 per cent solution of eosin and then making films. The bacterial bodies are positively stained and the capsules are seen by "relief staining." Suspending capsulated organisms in water hinders or completely prevents the demonstration of the capsules but does not destroy the latter. Capsules and bacterial bodies can still be demonstrated in cultures of pneumococci cleared by the addition of bile salt.

Cultivation of the Gonococcus.—McLeod and his collaborators maintain that cultural demonstration of the gonococcus is superior to demonstration by the examination of smears in chronic cases of gonorrhea in both sexes, and in all cases in the female, especially when material for examination is taken from the cervix. There is, however, a residue of cases positive in smear and negative in culture which with the methods at present available is larger than can be explained by false positives. A small proportion of false positives is undoubtedly recorded if diagnosis is determined by microscopic examination of gram-stained smear preparations only. Culture of many strains of gonococcus is promoted by incubation in air containing 8 per cent carbon dioxide. The recognition of gonococcus colonies in culture is greatly facilitated by the use of the direct oxydase reaction, and the employment of this reaction results in a marked economy of time.

Journal of State Medicine, London

42: 373-434 (July) 1934

Rôle of the Medical Practitioner in the Care of the Mother. Lady Barrett.—p. 409.
Tuberculosis from a Layman's Point of View. Lady Suffield.—p. 415.
Disease and National Disaster Traceable to Vegetable Sources. T. Oliver.—p. 418.
Problems of the Slums. C. K. Millard.—p. 426.

Journal of Tropical Medicine and Hygiene, London

37: 193-208 (July 2) 1934

*Melanoprecipitation Serologic Reaction in Malaria: Note. E. D. W. Greig, C. E. Van Rooyen and E. B. Hendry.—p. 193.
Effects of a Prolonged Drought on Disease Carriers. F. G. Cawston.—p. 195.
Pellagra in Sudan. N. L. Corkill.—p. 196.

Melanoprecipitation Reaction in Malaria.—Greig and his associates investigated Henry's melanoflocculation reaction in malaria. Melanin pigment extracted from human hair by hydrolysis with hydrochloric acid and dialysis through a collodion membrane has been found to give more satisfactory results than the use of crude aqueous suspensions of ox choroid membrane. By their technic it is possible to obtain a quantitative estimation of the reaction property of malarial serum with melanin pigment. The appearance, the rise and the fall of this property during the course of an illness have been accurately traced by the induction of benign tertian malarial infection in selected persons. The nonantigenic properties of melanin pigment and the low thermolability point (55 C. for half an hour) of the reacting power in positive malarial serum have been demonstrated. As evidence of the fact that the reaction is due to the presence of melanin pigment and not to any other, an analogous reaction has been shown to occur between dioxyphenylalanine, the precursor of melanin and malarial serums. The authors suggest the term melanoprecipitation reaction as a suitable name for the phenomenon. Their procedure consists of a row of ten Wassermann tubes laid out on a rack with a corresponding row of narrow agglutinating tubes opposite them. To each of the Wassermann tubes 0.4 cc. of distilled water is added, and in the first tube 0.4 cc. of the patient's serum is placed. From the first tube 0.4 cc. of 1:2 dilution of serum present there is withdrawn and added to the second tube, from which in turn is withdrawn the same amount, and the process repeated until the ninth tube is reached, from which 0.4 cc. is removed and discarded. With a pipet, 0.4 cc. of melanin is added to all the ten tubes. The 1 cc. measuring pipet is discarded and a Pasteur quill tube is substituted, with which mixtures are transferred from the Wassermann tubes to the narrow agglutinating tubes, commencing with the tenth one and working backward. The ultimate dilutions of patients' serum are thus 1:4, 1:8, 1:16, 1:32, 1:64, 1:128, 1:256, 1:512 and 1:1,024, respectively, the control tube (the tenth) containing melanin solution plus distilled water. The entire series should on examination be clear and transparent in appearance with no trace of particles in suspension; it is now incubated at 37 C. for five hours and the results are read at the end of that time.

Lancet, London

1: 1377-1428 (June 30) 1934

Functional Efficiency and Body Build in the Young Male Adult. H. A. Treadgold.—p. 1377.
Incidence of Human and Bovine Bacilli in Tuberculous Meningitis. A. S. Griffith.—p. 1382.
*Pellagra in Sudanese Millet Eaters. N. L. Corkill.—p. 1387.
Practical Treatment of Rickets in Children. J. R. W. Hay.—p. 1390.

Pellagra in Millet Eaters.—Corkill observed a pellagrous condition in 103 members of a tribe in Sudan, due no doubt to millet. Certain physical signs were "sulphur-flake" sebaceous dysfunction on the forehead, wings of the nose, cheeks and chin; a stomatitis characterized by the pronounced impression, as if in wax, of the lateral aspects of the closed rows of teeth on the mucous membranes of the cheeks; glossitis of various forms; blueness or blackness of the gums in patches or to complete involvement, and in certain subjects a deepening of the natural pigmentation on the forehead and cheeks. The most common subjective symptom was a burning pain in the hands, feet, head and interscapular region. This pain came at night or on going into the shade after being in the sun. It came daily in the hot dry season. In the rainy season it disappeared. Some subjects got it at seasons other than the hot dry season if they worked hard. The pain was often associated with swelling of the skin followed by desquamation. Other common symptoms were a gnawing or "hot" pain in the epigastrium, weakness, wasting, flatulence, vomiting, diarrhea, pains in the joints, lumbago, formication, vertigo, sleep dysfunction and mental disorder. The author suggests a new theory of the causation and nature of pellagra in that: 1. The fundamental condition is a lack of cholesterol and vitamin A and D in the food, lack of vitamin C being a contributory factor. 2. Pellagra is largely allergic, and the evils resulting from cholesterol and vitamin deficiency contribute to the syndrome, as do also cereal toxamin effects. 3. Pigmentation is protective against the actinic and tactile traumas affecting the skin of pellagrins. 4. Vitamin D, and not the hypothetic water soluble vitamin B_2, is the antidermatitis vitamin.

2: 1-62 (July 7) 1934

*Principles of X-Ray Therapy of Malignant Diseases. H. Coutard.—p. 1.
The Dangerous Multipara. B. Solomons.—p. 8.
Observations on Rosacea. S. Shone and G. P. B. Whitwell.—p. 11.
Psychologic Effects of Bodily Illness in Children. D. Forsyth.—p. 15.
Tuberculosis of Central Nervous System in Children: Apparent Clinical Recovery: Three Cases. Agnes R. Macgregor, H. J. R. Kirkpatrick and W. S. Craig.—p. 18.
Cyclopropane Anesthesia in Obstetrics. W. Bourne.—p. 20.

Roentgen Therapy of Malignant Diseases.—Coutard points out that the two principal factors in roentgen therapy are the energy and the time. They must be considered in their relation to the cancer cells and to the vasculoconnective tissue and the general tissues of the site from which the cancer is developing. In the course of treatment the principal guides should be the roentgen reactions of the vasculoconnective tissue of the covering epithelium and of the cancer cells. When one

is irradiating a small cancer, embryonic in type, the treatment can be completed in a short time, about twenty days; the epithelial roentgen reactions may be relatively intense, on condition always that their duration never exceeds fifteen days. When one is irradiating a cancer less embryonic in type, the treatment should be of longer duration, and the epithelial roentgen reactions should be slight. When an extensive cancer is being irradiated through fields of large dimension, as in the case of cancer of the uterus, the treatments should be forty days as a minimum; the cutaneous roentgen epidermitis should not be exudative and the roentgen epithelitis of the vaginal, intestinal or vesical mucosa ought to be slight. Symptoms, even temporary, of cystitis, proctitis or enteritis should be avoided. The question of energy—cancericidal dose—is essential in the treatment of an undifferentiated embryonic, roentgen sensitive cancer, and it is more important than the question of time. The energy seems to be directly destructive; the chronology is, above all, protective, since it allows the preservation of the supporting tissues in order to avoid accidents. The question of time is more important than the question of energy in the treatment of a differentiated roentgen resistant cancer. The energy should not provoke a destructive effect. Owing to a slow chronology and to weak daily doses, the disappearance of the cancer cells seems to follow a cellular evolution resembling the normal evolution. In determining the longer duration of treatment, one should aim at the perfect preservation of the supporting tissues so that the evolution effect may become possible.

Medical Journal of Australia, Sydney

1: 707-738 (June 2) 1934

Low Backache from the Orthopedic Point of View. E. B. M. Vance. —p. 707.
Rôle of Surgery in Carcinoma of Buccal Cavity. H. S. Stacy.—p. 712.
Cancer of Lip. L. M. McKillop.—p. 717.
Epithelioma of the Lip: Analysis of Cases. E. M. Fisher.—p. 720.
Epithelioma of the Lip and Associated Glands. I. B. Jose and H. A. McCoy.—p. 721.

1: 739-766 (June 9) 1934

Some Activities of a Mental Hospital Laboratory During Thirty Years. O. Latham.—p. 739.
Treatment of Suppuration in Bones and Joints. A. V. Meehan.—p. 748.
Treatment of Cancer of Lip by X-Rays. E. H. Molesworth.—p. 752.

1: 767-796 (June 16) 1934

Some Activities of a Mental Hospital Laboratory During Thirty Years: Epiblastic Tumors. O. Latham.—p. 767.
Treatment of Carcinoma of the Bladder and Prostate by Radium Implantation. R. J. Silverton.—p. 776.

1: 797-828 (June 23) 1934

Some Activities of a Mental Hospital Laboratory During Thirty Years: Pathology of Divers Mental States. O. Latham.—p. 797.
Obesity. E. H. Stokes.—p. 804.

Treatment of Cancer of the Lip by X-Rays.—When not more than half the depth of the lip from the edge to the reflexion of the mucous membrane to the alveolus is involved, Molesworth employs the following procedure: The lip is everted and fixed with strapping. After this a dose of 700 roentgens of the quality 120 kilovolts constant potential, with 1 mm. of aluminum filter, is delivered to the inner surface of the lip over a semicircle, 1 cc. of apparently normal mucous membrane being allowed to come into the beam. Of this approximately 500 roentgens survives at the opposite (skin) surface of the lip. Then the lip is allowed to fall back into normal position and a similar dose is delivered to the skin surface over a similar area, a piece of lead rubber being placed between the lip and the teeth and alveolus. This brings the dose at each surface to 1,200 roentgens and the distribution throughout the lip is quite even. A dusky red reaction with some exudation occurs on the surface of the skin and there is frank erosion on the mucous surface. This begins about eight days after irradiation and lasts for three weeks. Thereafter the improvement is rapid and at the end of ten weeks the lip is well, with no remaining infiltration. In the author's fifty cases in which he used the foregoing technic, the tumor has disappeared. There were two recurrences—marginal in each case and due to failure to expose a sufficiently wide margin of apparently healthy tissue. In only one case have the regional glands subsequently shown carcinomatous deposits. These two patients were operated on subsequently at an early stage with apparent success.

South African Medical Journal, Cape Town

8: 397-432 (June 9) 1934

Preparation of Maize Flour in Tanganyika Territory. R. R. Scott. —p. 399.
Carbon Monoxide Poisoning at the Pretoria Steel Works. L. Milner. —p. 402.
Postural Drainage in Treatment of Acute Pyelitis. V. Vermooten. —p. 405.
The Acnes. J. J. Jacobson.—p. 408.
Thyroid Intoxication. C. F. M. Saint.—p. 412.

8: 433-472 (June 23) 1934

What We Eat and Why. D. C. Watt.—p. 435.
Nupercaine in Spinal Anesthesia with Description of One Hundred and Ten Cases. R. S. Verster.—p. 442.
Manipulative Surgery. A. Radford.—p. 446.
Prevention of Maternal Mortality in Urban and Rural Areas. D. J. Malan.—p. 450.
The Workmen's Compensation Act. K. Bremer.—p. 456.

Tubercle, London

15: 433-480 (July) 1934

Allergy as a Factor for Consideration in the Treatment of Tuberculosis. S. L. Cummins.—p. 433.
State of the Teeth as a Guide to Prognosis and Treatment of Pulmonary Tuberculosis. F. W. Broderick.—p. 443.
*Simple Method of Estimation of Proteins of Blood Serum and Its Value in Tuberculosis. W. Pagel and L. B. Stott.—p. 454.

Estimation of Proteins of Blood Serum: Its Value in Tuberculosis.—Pagel and Stott examined more than 100 cases of all forms and degrees of pulmonary tuberculosis by the following method, which they found to be reliable for clinical purposes: Into six tubes is placed 0.5 cc. of physiologic solution of sodium chloride. To tube 1 is added 0.5 cc. of fresh filtered ox bile, from which 0.5 cc. of the mixture is transferred to tube 2. This process is continued up to tube 5, and 0.5 cc. of the mixture from tube 5 is discarded. The last tube (6) being a control tube contains only 0.5 cc. of physiologic solution of sodium chloride. After this, 0.5 cc. of 1:7 dilution of the serum to be examined is added to each tube and all tubes are heated until coagulation of the proteins appears in the last tube. The results are recorded immediately, and after twelve hours standing at room temperature. There are all degrees of coagulation, from intensive opacity like milk (++++), less opacity (+++), faint transparence (++), gradually falling (+±), to entire clearness (—). The authors believe that the bile test as a measure of the amount and behavior of the proteins of the blood serum gives a good indication of the extent and the activity of the anatomic changes in the majority of cases of pulmonary tuberculosis. Cases of hematogenous tuberculosis of the lung especially showed a strong bile test. Exudative infiltrations with a tendency to liquefaction and the development of more than one cavity reinforce the reaction, while local fibrosis of the foci and cirrhotic changes decrease the reaction. Marked anatomic change, such as cavitation and cirrhotic tuberculosis, can show a favorable bile test if the general condition is good. The number of such cases is small. In cases of albuminuria or loss of albumin from the body by any other way (sinuses), the bile test fails. In such cases the blood cell sedimentation gives reliable results. In many cases the bile test is in advance of the blood cell sedimentation test and coagulation band determination.

Quart. Bull., Health Org., League of Nations, Geneva

3: 1-156 (March) 1934

Best Methods of Treating Manure Heaps to Prevent Hatching of Flies. J. Parisot and L. Fernier.—p. 1.
Health and Economic Depression in United States of America: I. Illness in Families of Wage Earners in Five Surveyed Cities in Early Part of 1933. H. S. Cumming.—p. 32.
Health Organization and Narcotics Problem (1921-1933). I. Wasserberg.—p. 49.
Art of Healing and Sale of Remedies in France. G. Forestier.—p. 72.
Malarial Control in Turkey. Hüsamettin.—p. 129.

Japanese Journal of Obstetrics and Gynecology, Kyoto

17: 85-184 (April) 1934

Experimental Study on Effects of Vitamin B to Female Genital Organs: Part III. Morphologic Change Due to Deficiency Disease of Vitamin B in Female Genital Organs. J. Ueno.—p. 86.
Study of Icterus Neonatorum. H. Fujimori.—p. 95.
Comparative Study of Operative and X-Ray Castrations. S. Tomita. —p. 116.

Archives des Maladies de l'Appareil Digestif, Paris

24: 561-672 (June) 1934

*Modifications of Respiratory Exchanges of Man Under Influence of Some Pharmacologic Agents. Labbé and Rubinstein.—p. 561.
Pancreatic Lithiasis Diagnosed During Life: Case. C. Garin, P. Bernay and M. Giraud.—p. 590.
Control of Insulin Secretion in Man and Clinical Tests of Insulin Regulation. M. Vauthey.—p. 598.
Enlarged Infectious Liver and Spirochetosis. C. B. Farmakidis.—p. 619.
Experimental Studies on Rôle of White Bread in Alimentation. O. Kauffmann-Cosla, O. Vasilco and S. Oeriu.—p. 625.
Latent Angiocholecystopathies. M. Slonim.—p. 641.

Influence on Respiratory Exchange of Pharmacologic Agents.—The object of the investigations of Labbé and Rubinstein was to determine whether substances that stimulate the sympathetic system and the pneumogastric exert a simultaneous action on the respiratory exchanges, and whether substances like epinephrine, with specific sympathetic action, possess an effect on respiratory exchange opposite to that of substances which, like physostigmine, paralyze the sympathetic. The subjects for the tests were examined in the morning after a twelve hour fast and a half hour rest lying down. The basal metabolism was measured by the usual technic. Immediately afterward the medicament to be tested was injected. The respiratory exchanges were then remeasured at the end of ten minutes, thirty minutes and each thirty minutes thereafter for three hours. This gave information as to the time at which the greatest modification of exchanges occurred. The results are expressed in percentages of metabolism in relation to the normal basal metabolism of the subject. The respiratory quotient and the respiratory debit per minute were measured, the rapidity of the pulse and the arterial pressure were taken and the surface was calculated from the Du Bois tables. The substances examined, acting in different ways on the vegetative nervous system, exert a different qualitative and quantitative action on respiratory exchanges. Epinephrine increases the exchanges, while insulin and acetylcholine lower them. Atropine, which paralyzes the vagus, produces a double phased reaction: the first is lowering of the respiratory exchange rate, which is related perhaps to the initial stimulation of the vagus; the second is elevation of the respiratory exchanges in relation to the paralysis of the vagus. There is consequently an antagonism between the excitants of the sympathetic and the vagus as far as respiratory exchanges are concerned. Different persons react unequally to these substances. Those who react strongly to epinephrine react feebly to atropine and acetylcholine. Conversely, those who react weakly to epinephrine react strongly to atropine and acetylcholine. Subjects reacting by strong hypermetabolism to epinephrine exhibit other signs of sympathetic stimulation, such as rise in blood pressure and increased pulse rate. Those who have a weak metabolic reaction to epinephrine and a strong reaction to atropine and acetylcholine show symptoms of vagal stimulation, such as lowering of the arterial tension and slowing of the pulse rate. These correlations lead to the opinion that tests of the basal metabolism after injection of substances stimulating the sympathetic or the vagus are capable of throwing light on the condition of the neurovegetative system.

Paris Médical

1: 457-496 (June 2) 1934

Infectious Diseases in 1934: Annual Review. C. Dopter.—p. 457.
Vaccination Against Exanthematous Typhus. G. Blanc.—p. 471.
Rectopelvic Abscess by Meningococcus with Fatal Intestinal Obstruction in Course of Meningitis. F. Codvelle.—p. 474.
Use of Melitine in Patients with Undulant Fever: Its Diagnostic and Therapeutic Interest. H. Cambessédès.—p. 477.
Micrococcus Catarrhalis, Pathogenic Agent. Hugonot and Andrieu.—p. 481.
Acute Articular Rheumatism and Serotherapy. J. Huber.—p. 487.
*Gonococcus Reaction: Diagnostic Element; Test of Gonococcus Infection Recovery. L. Jame, A. Jude and E. Aujaleu.—p. 490.

Gonococcus Complement Fixation Reaction.—Jame and his collaborators conclude that the gonococcus complement fixation reaction as practiced according to the technic of Gauran (1923) is specific. In acute blennorrhagia it is, however, of little diagnostic interest, since microscopic examination of the urethral discharge is simple, rapid and to the point. It is of some value in the differential diagnosis of nongonorrheal urethritis. In chronic blennorrhagia its diagnostic value is relative. A positive reaction is confirmatory evidence of the gonococcic etiology of the discharge, but no conclusions can be drawn from a negative reaction. In doubtful cases numerous reactions must be performed in series. In genital and extragenital complications the reaction manifests its greatest positivity and specificity. In arthritis, especially, it is rarely wrong. As a sign of cure a negative reaction in a patient clinically well allows confirmation of the recovery; the bacteriologic recovery parallels the clinical cure. The passage from a positive to a negative reaction authorizes the affirmation of a bacteriologic cure after the clinical cure. A reaction remaining positive two months after the clinical cure suggests the persistence of a gonococcic focus. Vaccinotherapy modifies these conclusions. The positivity of the serologic reaction will be longer, and it is only at the end of about four months that a new reaction can give useful evidence on the evolution of the disease.

Presse Médicale, Paris

42: 937-952 (June 9) 1934

Anginal Pain and Its Surgical Treatment: Value of Different Methods and Especially Total Thyroidectomy. E. C. Cutler and S. A. Levine.—p. 937.
Curve of Postprandial Glycemia Test of Glycemic Equilibrium. J.-J. Rouzaud and L. C. Soula.—p. 940.
*Sign of Voice Imitation: Its Use in Diagnosis of Simulated Deafness. L. Baldenweck.—p. 942.

Voice Imitation in Diagnosis of Simulated Deafness.—Baldenweck describes a simple sign which he considers useful in the diagnosis of simulated deafness. It is based on the phenomenon that when two persons converse they instinctively use a similar vocal pitch. Thus, when one addresses another in a high voice, the other responds in the same fashion. Similar vocal changes in pitch can be observed in persons with moderate degrees of true deafness. In cases of partial deafness, after the ear that has not been examined is deadened by a sound apparatus, the hearing limits of the low conversational voice and strong conversational voice are determined. At the greater distance the voice is then varied from loud to low. The subject may not respond at all and has not heard or is a well schooled malingerer. If this is so, tests by other methods must be used. He may respond but without following the changes of voice intensity. In this case he is simulating. Finally he may respond, but this time imitating the voice changes. This would indicate marked exaggeration of the deafness. If this sign is negative in suspected simulation, one must try other means. If positive, it is a valuable proof of simulation.

Schweizerische medizinische Wochenschrift, Basel

64: 641-676 (July 14) 1934. Partial Index

Ligation of Veins in Puerperal Sepsis. Kappis.—p. 641.
Ring or Operation in Prolapse of Old Women. A. Labhardt.—p. 643.
Anterior Fenestration of Elbow Joint in Chronic Disorders. A. Lawen.—p. 644.
Surgical Treatment of Arteriovenous Aneurysm of the Innominate. E. Lexer.—p. 645.
*Indications for Time and Technic of Operation for Cryptorchidism. H. Matti.—p. 648.
Dangers of Cystoscopy and of Catheterism. A. Müller.—p. 651.
Embolectomy of Aorta. F. de Quervain.—p. 658.
Facilitation of Operative Treatment of Substernal and Mediastinal Struma. E. von Redwitz.—p. 659.
Operative Correction of Curvature of Legs in Osteitis Deformans Paget. W. Röpke.—p. 660.
Surgery of Traction Diverticula of Esophagus. F. Sauerbruch.—p. 662.
Traumatic Tetanus and Care for Surgical Wounds. H. von Seemen.—p. 667.
*Etiology of Relapsing Cystitides. H. Wildbolz.—p. 670.

Operation for Cryptorchidism.—Matti says it is erroneous to assume that a truly retained testicle may still descend spontaneously during the first years of life or up to the period of puberty. Subsequent descent is possible only in the case of so-called floating testicles drawn to the internal inguinal ring by the cremaster but which can be brought down into the fundus of the scrotum without exerting a strain on the funiculus. Since in all forms of retained testicles the relative shortening of the spermatic cord increases with the years, the prospects of a tensionless transplantation of the testicle to the normal place becomes constantly lessened. For this reason the author recommends early operative correction of cryptorchidism at the end of the first year of life or in the course of the second year. He asserts that in such early operations the orchiopexy,

which frequently has injurious results, can as a rule be dispensed with. A testicle that can be placed into the scrotum without great tension may be held in position by a suture that narrows the subcutaneous isthmus. The author is convinced that an improvement in the results of the treatment of cryptorchidism can be obtained only if early operative treatment is adopted as a general rule.

Etiology of Relapsing Cystitides. — Wildbolz observed that the stasis of secretion in the female urethra predisposes to cystitis. He also noticed that women who consulted him on account of relapses of cystitis quite frequently had the external urethral orifice deep in the vagina (indication of hypospadia) and also an unusually high posterior vaginal commissure, which inhibits the proper discharge of the vaginal secretion. In some of these women the abnormally high vaginal commissure was the result of plastic repair of the perineum, and in others it was congenital. There was always a stasis of vaginal secretion behind the transverse fold of the vaginal introitus. The urethral orifice was constantly surrounded by the secretion. The lips of the orifice were reddish and swollen, and the urethra contained purulent secretion. The cystoscopic examination of these patients did not disclose a cause for the relapsing cystitis in the bladder or in the upper urinary tract, and it was therefore logical to assume that the stasis of the secretion by the high vaginal commissure with backflow into the urethra was the cause of the frequent attacks of cystitis. This assumption was corroborated by the fact that the relapses of cystitis ceased as soon as the discharge of the vaginal secretion was facilitated by a median incision into the posterior vaginal commissure. The author emphasizes that the possibility of this undesirable result of a high posterior vaginal commissure should be kept in mind in case of plastic repair of the perineum.

Archivio Italiano di Chirurgia, Bologna

36: 645-764 (May) 1934

*Pyelovenous Reflux and Intrarenal Absorption. E. Ciocca.—p. 645.
Melanoma of Parotid. A. Migneco.—p. 670.
Technic of Excision of Stellate Ganglion. F. B. La Rossa.—p. 677.
*Action of Blood on Activity of Micro-Organisms Inoculated in Peritoneal Cavity. S. Teneff.—p. 698.
Relations Between Pyogenous Pulmonary Infection and Ligature of Bronchus. P. Bezza.—p. 715.
Fibroma of Sublingual Gland. A. Migneco.—p. 736.
Clinical and Surgical Considerations of Hydatidiform Choleperitoneum and of Hydatid Peritoneum. O. F. Mazzini.—p. 742.

Pyelovenous Reflux and Intrarenal Absorption.—Ciocca conducted experiments on dogs and rabbits. He found that micro-organisms in suspension, introduced into the renal pelvis through the ureter in ten minutes time and usually at a pressure of scarcely 10 mm. of mercury, may be recovered from the blood stream of the efferent vein. With opaque substances the author obtained roentgenologic images attributable to pyelocanalicular reflux not only in the kidney of the dog but also in that of the rabbit. The average degree of pressure to make this phenomenon visible on the plate usually begins at 40 degrees for the rabbit and at 60 for the dogs. At high pressure of from 80 to 100 degrees for the rabbit and from 120 to 140 for the dog, a direct pyelovenous reflux is shown in the live animals with yielding of the pressing piston, and also in the extirpated kidney under roentgenographic control and by direct observation of the reflux of the liquid injected into the renal vein. As an explanation of his results the author cites the factor of intrarenal absorption (previous pyelocanalicular reflux) through the epithelium of the tubules. This is also the reason for certain renal infections, such as cortical abscesses and infectious nephritides, without calling into play the pyelovenous reflux, which is a traumatic, accidental and violent phenomenon.

Action of Blood on Bacteria in Peritoneal Cavity.—Teneff experimented with rabbits to study the influence of the blood on the development of micro-organisms in the peritoneal cavity. He injected bacteria into the peritoneal cavity after having induced a hemoperitoneum by cutting the mesenteric artery. In the control rabbits he gave only an injection of bacteria in equal quantity. He used virulent cultures of Staphylococcus pyogenes-aureus, Staphylococcus pyogenes-albus, Bacillus coli and Bacillus prodigiosus and followed their numerical behavior several days after the injection. The author's results demonstrate that normally the peritoneum has a notable resistance to pathogenic germs which, when a certain quantity of autogenous blood is present, increases in the beginning, and the micro-organisms are destroyed in a large proportion by the physiologic bactericidal power of the blood. In the second stage (after from six to eight days) a rapid numerical increase in micro-organisms of the peritoneal cavity is observed which culminates sometimes in the appearance of a peritonitis, probably because the blood, being altered and exhausted in its bactericidal power, serves as food for the the development of the micro-organisms.

Archivos de Medicina, Cirugía y Espec., Madrid

37: 697-724 (June 30) 1934

Allergy in Children Who Received B C G Vaccine. A. Urgoiti, J. Hermida and E. Hervada Iglesias.—p. 697.
Muscular Metabolism in Addison's Disease. J. A. Collazo, Isabel Torres and J. Barbudo.—p. 698.
Diagnosis of Acute Perforation of Gastroduodenal Ulcer. R. López-Baena Morán.—p. 704.
Bone Graft to Cover Partial Loss of Radius: Technic. A. Ferre.—p. 706.
*New Medium for Isolation of Gonococci "in Vitro." H. del Castillo and L. Herraiz.—p. 710.

Medium for Isolation of Gonococci.—Castillo and Herraiz report satisfactory results in the isolation of gonococci "in vitro" by the use of a new medium. In its preparation 500 Gm. of beef, deprived of aponeurosis and fat, and 20 Gm. of caked brewers' yeast in 1,000 Gm. of water are left in maceration for fifteen hours. These ingredients are then boiled for fifteen minutes and filtered, enough water being added to make the original volume. Then 20 Gm. of Witte's peptone and 0.5 Gm. of potassium chlorate are added. The p_H is then fixed at 7.6 and the preparation boiled again, but only for a short time to precipitate the phosphates, and then filtered again. Agar-agar is then added in a proportion of 3.5 per cent; that is, 3.5 parts of agar-agar to 96.5 parts of the preparation. The preparation is then sterilized for three successive days for thirty minutes at a time in high pressure steam. After it is melted at a temperature of 45 C., rabbits' or horse's blood is added in the proportion of 20 per cent; that is, 20 parts of blood to 80 parts of the preparation. The medium is then ready to be placed in separate sterile receptacles for use.

37: 725-752 (July 7) 1934

Relations of Psychiatry to Penal Laws. A. Abaunza.—p. 725.
Relation Between Tetany and Rickets. M. Diaz Rubio.—p. 731.
*Index of Nuclear Deviation in Infantile Tuberculosis and Its Post-tuberculin Modifications. M. Blanco Otero.—p. 736.
Rapid Diagnosis of Type of Pneumococcus as Etiologic Agent in Pneumonic Diseases. V. Callao.—p. 738.

Nuclear Deviation in Infantile Tuberculosis. — Blanco Otero studied the modifications of the index of nuclear deviation forty-eight hours after the intradermal injection of a 1 : 10,000 solution of Koch's old tuberculin in a group of fifty-two children who suffered from different forms of either active or inactive (latent and residual) tuberculosis and five non-tuberculous children. The author, considering the index of nuclear deviation as represented by a fractional number, regarded the variations of the index, not exceeding one fifth (either in increase or in diminution) to the original fractional number, within the type of invariable reaction. The most frequent reaction in the whole group was that of the invariable type (60 per cent). The author interprets the invariability of the index as caused by a reaction of the organism to the stimulus of tuberculin with a parallel and proportional production or diminution of both immature and mature cells (myelocytes, juvenile cells and staff cells and segmented forms, respectively). The increase of the index is interpreted by an overproduction of immature cells, and its diminution by an overconsumption of mature cells by the organism during the reaction. There is no relation between the reaction of the augmentative type and the grave forms of tuberculosis in children. Only in cases of secondary infiltration were the variations of the augmentative type higher than those of the diminutive and invariable types (66.68 per cent). The variations of the augmentative type were also high in the group of nontuberculous children (40 per cent). This group, however, had the same figures for the augmentative type as for the invariable type of reaction. The author concludes by saying that up to the present time no prognostic or diagnostic value

can be given to the variations of the index of nuclear deviation following the intradermal injection of tuberculin in infantile tuberculosis.

Minerva Medica, Turin

1: 861-892 (June 23) 1934

Further Contribution to Knowledge of Familial Hyperhemolysis with Growth of Osmotic Resistance of Erythrocytes. G. Usseglio and F. De Matteis.—p. 861.
Morphology of Hypopharynx in Man and in Common Mammals. I. Balzano.—p. 870.
Contribution to Knowledge of Echinococcosis of Thyroid Gland. L. Loi and E. Puxeddu.—p. 874.
*Ketogenic Diet in Bronchial Asthma. L. Montagnini.—p. 877.
Protein Diet in Diabetes Mellitus. S. De Candia.—p. 884.

Ketogenic Diet in Bronchial Asthma.—Montagnini states that in every asthmatic attack factors arise which influence the acid base equilibrium. If the asthmatic attack is partial, only a part of the bronchial tree is involved in the spasm with a corresponding number of alveoli. Thus, through the increased respiration in deep respiratory movements an amount of carbon dioxide greater than normal is eliminated, resulting in a condition of gaseous alkalosis of the blood. If the spasm involves the greater part of the bronchial tree there is an acute retention of carbon dioxide in the poorly aerated alveoli with consequent gaseous acidosis. That the elimination of carbon dioxide may be profoundly and rapidly changed during an asthmatic attack is demonstrated by the rapidly changeable results in the depth of respiration and the basal metabolic rate. The author placed twelve asthmatic patients on a ketogenic diet consisting mainly of broth, meat, egg, egg white and some green vegetable (spinach). Some patients were in grave asthmatic conditions lasting several days at a time, while others had frequent and violent attacks. In these patients no other forms of hypersensitivity were manifest, such as habitual urticaria or the edema of Quincke. In general the patients were normal in type and well nourished. Urine was collected every twenty-four hours, after which the daily quantitative determination of the acetone and the beta-oxybutyric acid was made. The alkali reserve and the leukocytic formula were determined before and after the diet. During this period the patients were not subjected to any other treatment. The patients showed no ill effects from the diet and the results were encouraging. The author does not believe that there is a primary tendency to alkalosis in bronchial asthma due to the constitution of the asthmatic patient which brings on the attack; he maintains, however, that the acidifying method depresses the vagal tonus and stimulates the sympathetic and, as such, is a favorable element in the treatment of bronchial asthma. Although he observed a disappearance of crises and general improvement in all cases, he maintains that the acidifying diet is essentially a palliative treatment, the effects of which are felt only during the period of treatment since the state of artificially produced equilibrium lacks stability and must be continually stimulated. The author maintains that the degree of eosinophilia during the diet is completely independent of the variation of the alkaline reserve because the elevated acidotic condition does not bring on the disappearance of the eosinophils and the alkalotic condition does not tend to increase them.

Policlinico, Rome

41: 923-962 (June 18) 1934. Practical Section

Chronic Pancreatitis. A. Gasbarrini.—p. 923.
Changes in Pulmonary Auscultatory Signs as Influenced by Vagus Sympathetic Action. L. Katzilambros.—p. 931.
*Pathogenesis and Treatment of Cephalalgia Following Spinal Anesthesia. G. Zappalà.—p. 932.
Paraplegia in Scoliosis. E. Fiorini.—p. 937.

Cephalalgia Following Spinal Anesthesia.—Zappalà studied 100 patients presenting cephalalgia following tutocain and epinephrine spinal anesthesia. He found in the majority of cases that cephalalgia is accompanied by marked hypotension of the cerebrospinal fluid. The author experimented with intravenous and subcutaneous injections of various drugs, such as caffeine, ephedrine, an epinephrine-ephedrine preparation and ergotamine tartrate to combat the hypotension that is sometimes thought to be the cause of headache. He found that all have only an evanescent effect. The author advocates intradural injection of a 1 per cent solution of dextrose in severe and obstinate cases until the headache disappears. In fact it generally disappears during injection and when the mercurial manometer shows a pressure of from 21 to 23. According to the author, the volume action of the solution injected makes the hypotension disappear at once and therefore also the cephalalgia, while the slightly irritating action of the dextrose on the choroid plexus removes its temporary inhibition to secretion of the fluid. The author concludes that the reflex inhibition of the choroid plexus is the true cause of hypotension.

Semana Médica, Buenos Aires

41: 1897-2004 (June 21) 1934

Histopathology of Infantile Psychosis Associated with Flexibilitas Cerea and Cataleptic Attitude. V. Dimitri and M. Victoria.—p. 1897.
Parovarian Cyst with Twisted Pedicle Simulating Normal Pregnancy and Removed Through Vaginal Route: Case. A. Chueco and R. Fellner.—p. 1907.
Recklinghausen's Disease: Case. F. Bazan and Herta Hotte.—p. 1910.
Dystocia Due to Presence of Calcified Dermoid Cyst in Rectovaginal Septum. A. F. Gibert and A. Eiras.—p. 1913.
Dominion of Peridural Anesthesia and of Peridural Space in Surgical Technic. G. Zorraquín.—p. 1918.
Value and Significance of Deep Q Wave in Third Lead of Electrocardiogram. J. M. Balbi Robecco.—p. 1922.
*Arterial Pressure and Peripheral Venous Pressure in Mitral Stenosis and in Complete Arrhythmia. J. Espejo Solá.—p. 1937.
Mibelli's Angiokeratoma: Case. L. E. Pierini and N. O. Sánchez Basso.—p. 1940.
Mystic Delirium of Intuition: Case. F. Gorriti.—p. 1948.
Meningitis Caused by Friedländer's Bacillus: Case. G. A. Schiavone and F. Idelhson.—p. 1950.
Internal Dacryorhinocystotomy (Halle's Operation) in Surgical Treatment of Dacryocystitis. B. Just Tiscornia and C. P. Mercandino.—p. 1958.

Venous Pressure in Mitral Stenosis.—Espejo Solá considers the rise in venous pressure of great importance in the early diagnosis of cardiac decompensation in cardiac and cardiovascular diseases. He compares the figures of arterial pressure (maximal, minimal and mean) with those of the venous pressure in patients with mitral stenosis, hypertension and other cardiac diseases. He concludes by saying that in compensated mitral stenosis, with and without complete arrhythmia, both the arterial and the venous pressure were normal. In decompensated mitral stenosis with and without complete arrhythmia the arterial pressure was either normal or approximately normal, while the venous pressure was high. In auricular fibrilation the venous pressure does not undergo the systolic modifications to which the arterial pressure is constantly subjected, owing to the differences in the amplitude of the cardiac pulsations. The oscillometric index was held between 3 and 5 in compensated and decompensated mitral stenosis, whether or not complicated by complete arrhythmia. In arterial hypertension, complicated with decompensated complete arrhythmia, the venous pressure was high. In other decompensated cardiopathies with complete arrhythmia the arterial pressure was normal, while the venous pressure was high.

Deutsche medizinische Wochenschrift, Leipzig

60: 1003-1038 (July 6) 1934. Partial Index

Irritated Stomach and Peptic Ulcers, Their Etiology and Therapy. K. Westphal and W. Kuckuck.—p. 1003.
Status, Experiences and Progress of Modern Ray Therapy, with Especial Consideration of Malignant Tumors. G. Ernst.—p. 1008.
*Lead Encephalopathy. H.-G. Schwarz.—p. 1011.
Occurrence of Yellow Strains of So-Called Bacterium Typhi-Flavum in Environment. U. Villanueva Castro.—p. 1014.
*Local Application of Vitamin A in Treatment of Wounds. Z. Horn and S. Sándor.—p. 1018.

Lead Encephalopathy.—Following a review of the literature, in the course of which he points out that the opinions still differ about the nature of lead encephalopathy, Schwarz gives the histories of two cases. The two cases resemble each other in that the patients had attacks of convulsions and signs of lead poisoning. The first patient presented the aspects of lead poisoning with the lead line on the gums and with the typical changes in the blood picture. The neurasthenic condition that existed in the beginning was doubtless the precursor or atypical onset of the later severe nervous disorders. Gradually there developed inflammatory processes of the auditory and optic nerves. After an observation of two months, the symptomatology of lead encephalopathy developed rather suddenly with epileptic convulsions, pyramidal symptoms and psychic disturbances. The condition improved slowly, but there were several relapses with impairment of the consciousness. The second case described by the author demonstrates how

difficult may be the differentiation of lead encephalopathy from other conditions. The case was finally cleared up by the postmortem examination, which revealed no signs of lead poisoning but rather a severe cirrhosis of the liver with contraction of the liver and splenic tumor. The author points out that the terminal stage of the cirrhosis could readily be mistaken for lead encephalopathy, although diarrheas do not belong to the aspects of lead poisoning and the splenic tumor should have pointed to a different diagnosis. The cirrhosis of the liver led to hepatic coma with manifestations of stupor, anxiety and convulsions, which, in view of a former lead poisoning, were at first interpreted as the symptoms of lead encephalopathy. However, the final expert testimony was to the effect that the patient had died of cirrhosis of the liver.

Local Application of Vitamin A in Treatment of Wounds.—Horn and Sándor employed an ointment, containing in each cubic centimeter 2,000 units of vitamin A, in the treatment of new injuries. They observed that the healing process is influenced favorably. The secondary infection is inhibited by the acceleration of the formation of granulations. In the treatment of suppurating wounds, the ointment furnishes a protective layer between bandage and wound surface. The discharge of the secretion of the wound is facilitated. The formation of granulations is greatly increased, the disintegration of necrotic portions is promoted and the entire healing process is considerably accelerated.

Jahrbuch für Kinderheilkunde, Berlin

143: 1-64 (July) 1934

Cardiac Activity During Disintegration of Respiratory Center. A. Peiper and C. F. Good.—p. 1.
*Pathogenesis of Renal Dwarfism. A. Loeschke.—p. 11.
Congenital Duodenal Stenosis During Childhood. W. Ziegler.—p. 36.
Fetal Chondrodystrophia: Case. B. Szendi.—p. 49.

Pathogenesis of Renal Dwarfism.—In the first part of his study Loeschke discusses the growth disturbance in renal dwarfism. He points out that, although the chronic renal disturbance and its sequels has no doubt a certain significance for the growth of the organism, there are nevertheless many factors that speak against its primary importance. He thinks rather that a congenital component, that is, a defective general constitution, is the most important factor. This assumption is borne out by manifestations of degeneration in the ancestry, familial occurrence of renal disturbances in general and of renal dwarfism in particular, occurrence of growth disturbances before the onset of the renal symptoms and independent of the state of the disturbance, and occurrence of other malformations on or outside of the urogenital tract. All these factors may be found alone, several together, or entirely absent. The author differentiates two types of renal dwarfism. As representative of one type he cites the case of a renal dwarf with intact renal function. This case proves that renal dwarfism may occur without impairment of the renal function and thus speaks against a modification of the growth process by the renal disturbance. The growth of renal dwarfs is frequently unproportional, and in figure and general development they may be infantile. The author thinks that in congenital hydronephrosis growth disturbances are more frequent than is commonly assumed. In the discussion of another type of renal dwarfism it is shown that it is not dependent on the existence of a chronic interstitial nephritis. In the second part of his paper the author discusses the metabolism in renal dwarfism and the pathogenesis of renal rickets. Here he shows that the phosphatemic curve is higher in renal dwarfism than in children with normal elimination. This corroborates Mitchell's thesis of the stasis of phosphates. The blood sugar curve of renal dwarfism is somewhat higher and the epinephrine reaction is more pronounced than is the case in normal children. This is most likely the result of the acidotic metabolic condition of the children with chronic renal disease. The diastase elimination of children with renal dwarfism is not increased but is within normal limits. The author advances evidence for his opinion that the growth inhibition of the renal dwarf and the renal changes that occur in renal dwarfism present a congenital syndrome. In the development of renal rickets two factors probably assume an etiologic rôle, calcium deficiency and chronic acidosis.

Klinische Wochenschrift, Berlin

13: 969-1008 (July 7) 1934. Partial Index

Modern Treatment of Detachment of Retina and Extraction of Cataract with Aid of Electrocoagulation. A. Jess.—p. 969.
Studies on Uric Acid and Pathologic Renal Function. W. Voigt and H. Schülke.—p. 973.
*Behavior of Cholesterol Metabolism in Various Disorders of Vascular System. G. Kirchgessner.—p. 976.
*Experimental Production of Gastric Ulcers by Caffeine. H. Hanke. —p. 978.
Tachypnea in Epidemic Encephalitis. K. Liedholm.—p. 980.
*Changes in Blood Caused by Poisoning with Aniline. A. P. Gaeta. —p. 983.
Free Diet and Blood Sugar Curves Following Oil Tolerance Test. H. Schestedt.—p. 985.
Castle's Ferment and Funicular Myelitis. F. Salus and F. Reimann. —p. 986.
Influence of Aging Erythrocytes of Sheep on Heterophile Antibody Reaction in Blood Serums of Healthy Persons. G. K. Wenckebach. —p. 990.
Newer Staining Methods for Tubercle Bacilli. I. D. Hadziemmanuil. —p. 991.

Cholesterol Metabolism in Vascular Diseases.—On the basis of a comparison of the colorimetric and gravimetric methods for the determination of the cholesterol content, Kirchgessner concludes that, if done carefully, the gravimetric method gives exact values, while he rejects the colorimetric method as too inexact. He considers a causal relation between hypercholesterolemia and hypertension unlikely, because he found no unequivocal increases in the cholesterol values in any of the various forms of hypertension. With few exceptions, however, the patients with hypertension show a disturbance in the ratio between free cholesterol and cholesterol ester; the free cholesterol is nearly always increased. The author describes experiments on rabbits. On the basis of clinical and experimental observations, he rejects the theory that the increased cholesterol content of the blood is the cause of hypertension, but he admits the occasional concurrence of hypercholesterolemia and hypertension.

Production of Gastric Ulcers by Caffeine.—Because caffeine stimulates the secretion of gastric juice, Hanke employed it for the experimental production of chronic ulcers in cats. For two months the animals were given almost daily subcutaneous injections of from 0.2 to 0.3 Gm. of caffeine sodiosalicylate (in a 10 or 20 per cent solution). They were given their usual plentiful supply of food in the evening. The remnants of the food were removed early in the morning, so that, when the injection was made at noon, the cats had had no food or fluid for at least four hours. A new supply of food was not given until six hours after the injection. At the end of two months the stomachs of the cats showed chronic ulcers, the structure of which resembled closely that of human ulcers (leukocytic layer of exudate, layer of fibrinoid necrosis, layer of granulation tissue). The author assumes a primary peptic pathogenesis. He thinks that the ulcers develop as the result of the influence exerted by the excessive amount of acid gastric juice (secreted because of the caffeine injection) on the mucous membrane of the empty stomach. He calls attention to the possibility that caffeine may play a part in the pathogenesis and further development of peptic ulcers in human subjects.

Changes in Blood Caused by Poisoning with Aniline.—Gaeta describes the changes observed in the blood of rabbits that had been poisoned with parenterally administered aniline. He observed an intense and rapid reduction in erythrocytes, running parallel with the severity of the poisoning, and a slight hypochromia with progressive decrease in the hemoglobin. The blood smears revealed anisochromia, anisocytosis, polychromatophilia and poikilocytosis. During the terminal stage there appeared orthochromatic and basophile erythroblasts in the circulating blood. It was never possible to demonstrate the presence of erythrocytes with basophile granules, or those endoglobular formations which other observers had noted in the erythrocytes of animals poisoned with substances forming methemoglobin. Vital staining revealed a constant increase in the erythrocytes with granular and thready substance, but it proved extremely difficult to demonstrate the presence or a percental increase of the erythrocytes with metachromatic granules. The white blood picture was hardly at all influenced, except that shortly before death, after the poison had caused

a severe cachexia, there was a pronounced leukocytosis. The examination of the bone marrow disclosed an intensive erythremic reaction with involvement of the leukopoietic as well as of the megakaryopoietic system. In some animals the bone marrow even showed the typical aspects of a myeloid metaplasia.

Wiener klinische Wochenschrift, Vienna

47: 801-832 (June 29) 1934

Biology of Processes of Development and Transformation of Bone in Light of New Histologic and Experimental Experiences. Carla Zawisch-Ossenitz.—p. 801.
Allergic Manifestations and Their Interrelations. B. Fornet.—p. 804.
Comparison Between Treatment with Long and Short Waves. J. Kowarschik.—p. 806.
*New Method of Artificial Respiration. S. Jellinek.—p. 808.
Clinical Aspects of Coronary Thrombosis. R. Singer.—p. 810.
*Rapid Hormone Diagnosis of Pregnancy on Sexually Mature Mice. A. Mandelstamm and E. Kaplun.—p. 813.
*Symptomatology of Thallium Poisoning. Edith Klemperer.—p. 814.
Early Diagnosis of Carcinoma of Stomach. R. Lenk.—p. 818.
Masked Myxedema. E. Risak.—p. 821.

Artificial Respiration.—Jellinek calls attention to deficiencies in the usual methods of resuscitation; namely, to the fact that there is frequently neglect to pull the tongue of the victim forward so as to permit a free passage of air, and to the fact that by the compression of the thorax, which is the principal of the usual methods of resuscitation, the negative intrathoracal pressure, which is so important for the cooperation of lung and heart and also for the lung itself, is reduced or even nullified. The fact that the compression of the thorax sometimes produces results does not appear to the author as a valid argument against the danger inherent in this method. In discussing the first point of his criticism, that is, the failure to insure a free passage of air, he shows that some of the methods suggested for this are not suited for emergencies. He suggests a new method. He advises that the second and third fingers of the right or left hand of the victim be brought into the mouth so that their terminal phalanges press the tongue against the lower teeth, and that at the same time the fingers be pushed completely into the mouth. In order to keep them in this position, the elbow has to be given support by tying it up. Not only respiratory experiment but also roentgenoscopy reveals that this automatic fixation of the tongue leaves the air passage unhindered. In order to avoid the dangers involved in the compression or traction of the thorax the author suggests the following method: The victim is lying horizontally and on his back. A folded cloth, some paper or straw is placed under him in the region of the upper angles of the scapulas, thereby producing a free space between the shoulders and the surface the patient is lying on. Then the tongue fixation is done in the manner described. Artificial respiration is done by grasping each shoulder with one hand in such a manner that the fingers rest on the external surface of the upper end of the arm and the thumb on the acromial termination of the clavicle. With a quick pressure the shoulders are pressed downward and after a second the pressure is released just as quickly. The same procedure is repeated after intervals of from one to two seconds. In discussing the effect on the thorax, the author points out that roentgenoscopy reveals that the described manipulation of the shoulders results in an extension of all three diameters of the thorax. Tests of the pressure conditions and manometric tests disclose the suction produced by the method; in fact, all tests prove that this new technic of artificial respiration produces an enlargement of the thorax and active inspiration.

Rapid Diagnosis of Pregnancy.—Mandelstamm and Kaplun show that, if sexually mature mice which have been exposed to irradiation with red rays are employed in the hormone pregnancy test, the time required for its completion is only half of that required for the original Aschheim-Zondek test. They inject from 3 to 5 cc. of detoxicated urine of a pregnant woman intravenously into the animals, and from forty-eight to fifty hours later the characteristic blood dots can be seen in the ovaries of the animals without the aid of microscopic inspection. The irradiation with red rays permits a reduction in the number of experimental animals for each test to two or even one. The authors assert that the reliability of their modified method is equal to that of the original method. A great advantage of the method is the ease with which the experimental animals can be obtained, because adult animals can be used, irrespective of the phase of the sex cycle. Moreover, the animals do not have to be killed and can be used for other experiments.

Thallium Poisoning.—Klemperer relates the clinical history of a woman, aged 37, who was hospitalized from five to six weeks after her disorder had begun with vomiting and diarrhea. The woman related that in the last three or four weeks she had had pains in the lower extremities, particularly in the thighs. At first she was still able to walk but later there was formication, her toes felt dead and the pains became so severe that she was unable to walk. She felt formication also in the left arm and vomited after eating. She lost all the hair of her head, and her scalp was painful. She had a sensation of glimmering before her eyes and severe pains in the occiput. The severe pains resulted in insomnia. At first there was no clue as to what could have caused the disturbance, but finally the patient recalled that shortly before the first symptoms appeared she had tried to poison her dog (old and blind), by putting a poisonous paste in his soup. She ate the same kind of soup and since the two plates looked alike she must have mistaken the one for the other, for nothing happened to the dog. The author gives a detailed description of the clinical course. The patient presented the aspects of a polyneuritis with frequent recurrences. There were several unusual aspects, which differ from the typical symptomatology of thallium poisoning. The superciliary hair growth was not impaired in the lateral portions. The new growth of the hair of the head was darker and more curly. Another not quite typical symptom was the dilatation of the pupils. They reacted to light promptly but slightly and became dilated again immediately, so that they presented the aspects of a hippus. Most interesting were the motor disturbances of the upper extremities. When the woman held the arms forward a tremor was noticeable, like that which is observed in alcoholism or lead poisoning. Superimposed on this tremor, there were peculiar pendulum-like movements of the arms. The patient was unable to suppress these movements when she tried to hold the arms quiet, but when she performed active movements they disappeared. The nature of the lesion that caused these symptoms can only be conjectured.

47: 833-864 (July 6) 1934

Assimilatory Portion of Metabolism in Its Connection with Function of Insular Organ. H. Schur, A. Löw and A. Kréma.—p. 833.
Vessels of Mucous Membrane of Bleeding Uterus. O. Frankl.—p. 838.
Problems and Foundations of Treatment of Epilepsy. F. Frisch.—p. 843.
*Presence in Human Blood of Water Soluble Substance Producing the Allen-Doisy Test. P. Engel.—p. 847.
Unusual Clinical Aspects in Diffuse Metastatization of Mammary Carcinoma. R. Baumann.—p. 848.
*Treatment of Anuria Caused by Corrosive Mercuric Chloride by Means of Peritoneal Dialysis. J. Balázs and S. Rosenak.—p. 851.
Roentgenologic Diagnosis in Obstetrics and Gynecology. H. Heidler.—p. 854.
Mistakes and Dangers in Local Anesthesia. F. Starlinger.—p. 856.

Substance Producing Allen-Doisy Test.—Engel succeeded in demonstrating in the blood a substance capable of producing a positive Allen-Doisy test. However, the substance influences neither the uterus nor the male genitalia. It lacks gonadotropic influence. The substance is obtained in a similar manner as is the estrogenic substance of the pineal body (which it resembles also in its action), by alkaline-aqueous extraction from acetone dry powder. The blood of younger men contains the substance in larger quantities than does that of older men. In women the opposite condition seems to obtain, but in both sexes there are so many exceptions from this rule that a valid generalization is impossible. Many factors seem to indicate that the substance is identical with that of the pineal body, but because in the case of the blood extract the action appears and disappears more rapidly than is the case in the extracts of the pineal body, this conclusion cannot be drawn with absolute certainty. Of course, it is possible that the pineal body contains also an inhibiting substance. The concentration is much less in the blood than in the pineal body.

Anuria Caused by Corrosive Mercuric Chloride.—Balázs and Rosenak review the literature on the intravital dialysis of the blood and then describe their application of it in cases of poisoning with corrosive mercuric chloride. Following infiltrative anesthesia of the abdominal walls, button-hole laparotomy is done at the upper median line and in the ileocecal region. Through each of these openings a perforated glass

cannula is introduced in such a manner that the end of the one cannula comes between the liver and the diaphragm and the end of the other into Douglas's pouch. In this manner a continuous irrigation of the abdominal cavity is made possible. The authors maintain that this method is superior to the mere filling of the abdominal cavity by means of puncture and by subsequent withdrawal. It is desirable to extend the irrigation for from three to four hours. Dextrose solution seems to be superior to sodium chloride solution as an irrigation fluid. Case reports indicate that the authors employed a 4.2 per cent solution of dextrose or an 0.8 per cent solution of sodium chloride. The temperature of the irrigation fluid was between 42 and 44 C. Peritoneal dialysis seems to be indicated in severe anuria or oliguria resulting from poisoning with corrosive mercuric chloride, particularly when uremic symptoms threaten. It is combined with other methods such as infusion and venesection.

Zeitschrift f. d. ges. experimentelle Medizin, Berlin

93: 685-825 (June 14) 1934

Position of Head, Labyrinth and Circulation. R. E. Mark and L. B. Seiferth.—p. 685.
Method of Determination of Osmotic Resistance of Erythrocytes. W. E. Künstler.—p. 706.
Influence of Sympathetic on Refractory Stage of Muscle. R. du Mesnil de Rochemont, H. Christ and B. Heimbrecht.—p. 723.
*Influence of Throttling of Pulse on Result of Determination of Blood Pressure. H. J. Wolf and W. Aurin.—p. 740.
*Method of Direct Determination of Blood Pressure in Human Subjects: Registration of Absolute Sphygmogram by Means of Arterial Puncture. H. J. Wolf and K. Kindler.—p. 746.
Experimental Studies on Influence of Thoracic Trauma (Caused by Dull Force) on the Heart. G. Schlomka.—p. 751.
Investigations on Changes in Cerebral Volume in a Man with Cranial Defect. M. Dobreff and T. Gotzeff.—p. 775.
Experimental Studies on Problem of Hemolytic Function of Spleen: Surface Tension of Blood Serum in Veins of Hepatolienal System. Doris Abramsohn and G. Frenckell.—p. 782.
Amino Acid Tolerance Test as Functional Test of Liver. S. Wagner and W. Gneiting.—p. 786.
Histologic Foundations of Acetonitrile Test on Thyroid of White Mice. E. Santo.—p. 793.
Pathophysiology of Carbohydrate Metabolism in Infectious Fever. S. Leites, L. S. Lifschitz and A. Odinow.—p. 803.
Development and Form of Short Wave Heat Bands in Agar Models. W. Allbrecht.—p. 816.

Influence of Throttling of Pulse on Blood Pressure.—Wolf and Aurin point out that the nonsurgical determination of maximal pressure is, except when oscillographic methods are used, based on the principle of the closed artery. Objections have been made to this procedure by some investigators, who call attention to the fact that, if the maximal blood pressure is determined on the basis of the closed artery, the tension of the arterial wall as well as the kinetic energy of the blood is included in the result obtained by this method of measurement. For this reason the authors decided to determine the influence of the throttling of the pulse on the type of pulsation and on the height of the blood pressure by means of a method of the registration of absolute sphygmograms, which avoids the division of the vessels and thereby leaves essentially unchanged the wall tension of the arteries as well as the movement of the fluid. The experiments were made on dogs and it was found that the throttling of the pulse causes considerable changes in the pulsation. Independent oscillations of the throttled section of the artery heighten the blood pressure values: the systolic maximal value becomes increased, the diastolic minimal value remains unchanged or is only slightly increased, the blood pressure amplitude becomes considerably increased. The independent oscillation of the throttled portion of the vein becomes especially noticeable following injection of epinephrine; it begins now earlier in the ascending portion of the systole, but as a result of this earlier development it causes no great increase in the blood pressure. The authors conclude from their observations that the throttling of the pulse causes a change in the results of the measurement of the absolute blood pressure values, which should not be overlooked when the human blood pressure is measured on the basis of the principle of the closed artery.

Direct Determination of Blood Pressure.—Wolf and Kindler discuss the registration of the absolute sphygmogram by means of arterial puncture. They describe an apparatus that permits the direct measurement of the blood pressure in the cubital artery, and they give a detailed description of the entire procedure.

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*Clinical Experiences with Counting of Labor Pains According to Frey. H.-P. Müller.—p. 1570.
Pregnancy and Normal Delivery Following Implantation of Uterine Tube. E. Kattermann.—p. 1580.
Etiology of Spontaneous Abortion: Pregnancy and Brucella Abortus Infection. F. Witenstein.—p. 1583.
*Torsion of Axis of Myomatous Uterus. R. Schweigl.—p. 1588.
*Management of Delivery in Myoma Praevium. O. Koller.—p. 1592.

The Counting of Labor Pains.—Müller considers counting of labor pains according to Frey a method that permits a qualitative estimation of the process of delivery. The counting should begin after the rupture of the bag of waters, for certain rules can be applied only after this point is reached. Frey and his associates have determined the highest number of pains for the various stages of the labor process. They found that after these numbers have been exceeded a spontaneous delivery cannot be expected without threatening the life of mother and child. The author's observations corroborated Frey's statements to a large extent, and he concludes that the counting of the labor pains is a valuable and simple aid in the management of the process of birth.

Torsion of Axis of Myomatous Uterus.—Schweigl gives the clinical history of a woman, aged 53, whose abdominal symptoms had been diagnosed as resulting from a myomatous uterus with necrosis and possibly torsion of the uterine axis. Signs of severe cardiac insufficiency predominated for a time and laparotomy could be resorted to only after the cardiac insufficiency had been counteracted. The operation revealed a large myomatous uterus, the axis of which had been turned 450 degrees, the twist being in the region between the body and the neck of the uterus. The operative specimen weighed 3.5 Kg. The author discusses the incidence of torsion of the axis of the uterus and the pathogenesis of the phenomenon. A review of the literature convinced him that the condition is comparatively rare. In discussing the development he cites Albrecht, who maintained that large intramural myomas during pregnancy and large myomas during the postmenopausal age are predisposing factors in torsion of the uterine cervix. He mentions Sellheim's theory explaining the torsion as the result of the persistence of a pedicled growth in a rotary motion that has been transferred from the body of the woman to the growth (lifting, sudden bending, dancing). This theory has been corroborated by Küstner. Payr, however, has suggested a hemodynamic theory of torsion, according to which stasis in the veins of the tumor may produce a turning movement. In the reported case, the causal factor was not determined.

Management of Delivery in Myoma Praevium.—Koller describes three cases of myoma praevium, each of which required a different procedure: in one case an abdominal cesarean section with simultaneous enucleation of the two tumors from above; in another case perforation and extraction of the child with subsequent vaginal removal of the tumor, and in the third case abdominal cesarean section with subsequent removal of the tumor through the vagina. However, the author admits that a certain hesitation about the enucleation of the tumor from the puerperal uterus is justified. In the reported case it was permissible because of the superficial position of the tumor on the vaginal portion of the uterine cervix. Postponement of the removal of the tumors until after the puerperal period was inadvisable, because of the large size of the tumor, which caused an obstruction of the cervical canal and which in turn would have provoked a further complication by causing stasis of the lochia. The author considers an exception in myoma praevium the fact that in the other case the child had to be sacrificed. In the case under consideration this was unavoidable, because of the undetermined nature and site of attachment of the tumor and the impossibility to differentiate it from the fetal head, which stood at the pelvic inlet. The subsequent vaginal removal of the cervical myoma after the cesarean section, the procedure followed in the third case, is considered the least dangerous method, provided of course that the approach from the vagina is feasible. At any rate the three cases prove that general rules cannot be made and that individualization is necessary in cases of myoma praevium.

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Value of Absorption Tests in Serologic Diagnosis of Various Leptospira Infections. A. Charlotte Ruys and W. A. P. Schüffner.—p. 3110.
Manner of Infection in Weil's Disease. P. H. Van Thiel.—p. 3115.
*Deficiency Symptoms in Chronic Gastro-Intestinal Diseases. J. Goudsmit. —p. 3123.
Witch in Folk Medicine. M. A. Van Andel.—p. 3140.

Deficiency Symptoms in Gastro-Intestinal Diseases.—Goudsmit found that real avitaminoses (pellagra and beriberi) may occur in chronic gastro-intestinal diseases. They may be the consequence of an unbalanced diet or of an insufficient resorption of vitamins (conditional deficiency). It may be assumed that latent deficiencies take place in chronic gastro-intestinal diseases. Four patients presented a symptomatology of nail, tongue and reflex lesions that corresponded fully to the symptoms often seen in achylic anemia. The ectodermal syndrome in achylic anemia is probably caused by a faulty resorption of indispensable substances. Perhaps a deficient resorption of B_2 is responsible. Consequently the ectodermal syndrome observed in four gastro-intestinal patients was considered a sequel of deficiency. Areflexia in gastro-intestinal diseases was recorded as an atypical form of the tongue-nail reflex lesions. These deficiency symptoms are caused by faulty diet or by impeded intestinal resorption. The frequent occurrence of fat in the feces of patients presenting this syndrome may, in connection with research done by Schuringa on fat-free diets, indicate that a poor fat resorption is of great importance for the causation of latent deficiency in those suffering from chronic gastro-intestinal diseases. In these patients attention must be paid to a correct diet as well as to fat resorption. Faulty fat resorption may be the sign of a chronic secondary gastro-enteritis, and the author considers it a more important factor in causing deficiency symptoms than an insufficient diet.

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75: 1-176 (Supplement 33) 1934

*Study on Cause of Death in High Intestinal Obstruction: Observations on Chlorine, Urea and Water. E. Schnohr.—p. 1.

Cause of Death in High Intestinal Obstruction.—In experiments on rats, Schnohr investigated whether the loss of chlorine, of water, or of both, was the cause of death in high intestinal obstruction. He found that chlorine was lost from the gastro-intestinal tract, leading to hypochloremia and a definite lowering of the chlorine concentration in the skin, the liver and the kidneys. No alterations could be traced in the muscles, lungs or spleen. The chlorine content of the brain was increased. The conclusion was drawn that the period of survival does not depend on the degree of hypochloremia and that there is no evidence that death was caused by concentration of chlorine in any particular tissue, or that the decrease or increase or any specific level of chlorine concentration was the decisive factor in causing the death of the animal. The author found that the skin and the kidneys lost 30 per cent of their initial chlorine content, and the liver about 20 per cent. The quantity lost from the skin is equal to about one half of the entire loss. It also appeared that the skin lost its ability to store chlorine. The rise of the chlorine concentration in the brain is not specific for intestinal obstruction, and there is no indication that it is capable of influencing the period of survival. When salt was administered to animals with high intestinal obstruction, it was found that chlorine concentration in the brain was relatively higher than in the other organs. Animals treated with a 10 per cent solution of sodium chloride parenterally lost the same quantity of chlorine per unit as nontreated animals. The channels through which chlorine was lost differed however, the treated animals losing far less through the gastric secretion and excreting far more through the kidneys than the nontreated animals. The administration of a 10 per cent solution of sodium chloride had a pronounced diuretic effect. The author concluded that administration of a hypertonic salt solution sufficient to make up for its loss is manifestly important in the prolongation of the life of an animal suffering from high intestinal obstruction. No relation could be demonstrated in rats suffering from high intestinal obstruction between the quantity of fluid lost, the water concentration of the tissues and the length of survival. Dehydration, therefore, could not be considered the determining factor in causing death. Administration of hypertonic saline solution does not seem to dehydrate an organism suffering from ileus. High values of blood urea were observed in rats with high intestinal obstruction. This azotemia responded to the administration of hypertonic salt solution with a definite lowering. But part of the azotemia remains in spite of the saline injections and shows no relation to the total chlorine content of the organism, the serum or urine chlorine or the diuresis and must therefore be considered to be due to an increased formation of urea that cannot be excreted as fast as it is produced. With intestinal obstruction an organism suffers on an average a loss of weight twice as great as during fasting, partly because of an increased loss of fluid and partly because of an increased metabolism. Examination of the organs showed that the liver and the spleen suffered a rather striking loss, about 40 to 60 per cent of their original weight. Since administration of hypertonic salt solution increased diuresis and lowered the azotemia, its beneficial effect is attributed to an increased excretion of toxins. He concludes that death in high intestinal obstruction is due to toxemia.

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14: 115-211 (No. 2) 1934

Quantitative Hormone Examinations in Urine of Castrated Women. P. Damm.—p. 115.
*Experiments with Obstetric Electrography. S. Clason.—p. 131.
*Fibrinogen Content of Blood in the New-Born, with Especial Consideration of Conditions in Haemophilia Neonatorum Temporaria. J. Naeslund.—p. 143.

Obstetric Electrography.—Since efforts to register uterine contraction on the basis of mechanical principles have evolved no satisfactory method, Clason gave his attention to the electrographic registration. He employs so-called needle puncture electrodes and the intensifier electrocardiograph constructed by Duchosal and Luthi. His experiments indicate that the registration is clearest if one electrode is attached above the corner of the uterus and the other one above the symphysis. The electrography revealed that, several seconds before the woman feels the labor pain and also several seconds before the observer can detect the uterine contraction by palpation, the difference in the electrical potential, which is present during rest, begins to decrease. This decrease continues uniformly for several seconds, but after that it remains essentially the same throughout the duration of the contraction. To be sure, the milliamperemeter records various deflections, but these seem to be of a different size range and are probably largely due to respiratory movements, pressing and so on. Because of poor damping of the milliamperemeter, an exact analysis is not possible as yet. At the end of the uterine contraction the milliamperemeter returns to the original position. The return is somewhat slower than the primary change. He is convinced now that electrometrograms of various types may occur, and he thinks that this is due to the fact that there are currents of the body of the uterus and currents of the isthmus of the uterus, which seem independent of each other.

Fibrinogen Content of Blood in the New-Born.—Naeslund found that the fibrinogen content of the blood of healthy children is low at birth. It rises rapidly, however, and at the end of the first week is approximately twice the amount at birth. This rise in the fibrinogen content cannot be caused by the loss of water alone. In infants who showed an increased tendency to bleeding, this rise in fibrinogen seems to fail, for in these children the fibrinogen values generally are lower than in healthy children of the same age. Moreover, the coagulability of the blood is considerably reduced in these children. The author assumes that the low fibrinogen content and the reduced coagulability of children with haemophilia neonatorum temporaria is probably a cause of the condition, although other factors such as a change in the calcium and fluoride content of the blood and the degree of oxygenation may play a part. Following a blood transfusion, the amount of fibrinogen increases and so does also the coagulability. The author thinks that these factors may possibly explain the favorable effect of blood transfusion on children with an increased tendency to bleeding.